EXAMINING THE RELATIONSHIP OF RISK, TREATMENT READINESS, AND THERAPEUTIC CHANGE TO RECIDIVISM IN A SAMPLE OF TREATED SEX OFFENDERS

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ABSTRACT

The present study examined the interrelationship of risk for recidivism, treatment readiness and responsivity, treatment-related change, treatment attrition, and recidivism among sexual offenders. It provided a cross validation of selected risk assessment measures, including the Static-99R, STABLE 2007, and Violence Risk Scale – Sexual Offender version (VRS-SO), as well as a clinical rating scale, the Treatment Readiness, Responsivity, and Gain Scale: Short Version (TRRG:SV). The primary focus of the study was to evaluate the relationship between treatment-related change and recidivism. The study was archival and participants included 185 federally incarcerated adult male sex offenders who participated in the Clearwater Sex Offender Treatment Program at the Regional Psychiatric Centre (Saskatoon, SK) between 1997 and 2001 and were followed up for an average of 9.3 years (SD = 3.0) post-release. Twenty percent of the sample was convicted for a new sexual offense, 45% for any new violent (including sexual) conviction, and 61% for any new conviction. The Static-99R, STABLE 2007, and VRS-SO all predicted violent recidivism (AUC = .62 to .72), as did the TRRG:SV (AUC = .32 to .37). Moreover, the dynamic risk measures demonstrated significant incremental validity, controlling for the Static-99R, in the prediction of sexual and violent recidivism. Treated participants made significant pre- to post-treatment changes on the VRS-SO, STABLE 2007, and TRRG:SV. Changes on the VRS-SO were significantly associated with lower rates of violent recidivism, with and without controlling for pre-treatment risk. Changes on the TRRG:SV were significantly associated with lower rates of sexual and violent recidivism. Significant predictors of treatment attrition were identified in the domains of criminal history, pre-treatment risk, treatment readiness and responsivity issues, and institutional adjustment. Implications for offender assessment, management, and rehabilitation are discussed.

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Chapter 1: Examining the Relationship of Risk, Treatment Readiness, and Therapeutic Change to Recidivism in a Sample of Treated Sex Offenders

According to a Statistics Canada report on sexual offenses, sexual assault accounted for 8% of all police-reported violent crime in 2007, corresponding to an estimated 24, 200 sexual offenses (i.e., 73 per 100,000 Canadians; Brennan & Taylor-Butts, 2008). The report indicated that, in reality, this number is much higher; victimization survey reports suggested that less than one in ten incidents of sexual assault were reported to police. According to a 2004 General Social Survey on Victimization, "approximately 512,200 Canadians aged 15 and older were the victims of a sexual assault in the 12 months preceding the survey" (i.e., 1,977 per 100,000; Brennan & Taylor-Butts, 2008, p. 8). This is a particularly relevant problem locally considering that Saskatchewan had the highest rate of police-reported sexual offenses among the provinces in 2007 (i.e., 138 per 100,000 population; Brennan & Taylor-Butts, 2008). Furthermore, sex offenders had a higher tendency to repeat offending prior to being reported to police and those found guilty in adult court were more likely than other violent offenders to receive a prison sentence (Brennan & Taylor-Butts, 2008). These facts highlight the importance of providing correctional treatment to sex offenders and of assessing the impact of such programs on recidivism risk if there is to be a decrease in the likelihood that more victims will be sexually assaulted in the future.

Recent Statistics Canada reports (Brennan, 2012; Brennan & Dauvergne, 2011) indicated that, in 2010 and 2011, Saskatchewan reported the highest Crime Severity Index (CSI) among the provinces, as has been the case since 1998. The CSI accounts for the volume and seriousness of crime. Manitoba, followed by Saskatchewan, reported the highest Violent CSI among the provinces. Further, across both years, Saskatchewan reported the highest total and violent crime rates among the provinces (Brennan, 2012; Brennan & Dauvergne, 2011). In 2010, across Canada, increases were reported in the rates of child pornography offenses (+ 36%) and sexual assault (+5%; Brennan & Dauvergne, 2011). From 2010 to 2011, the rate of sexual violations against children rose 3%, notably invitation to sexual touching (+8%) and luring a child via a computer (+10%; Brennan, 2012). As of January 2010, the Correctional Service of Canada (CSC) was responsible for over 22,000 offenders, 14% of which were sex offenders (CSC, 2010). These facts further indicate the salient nature of crime, including violent and sexual crime, across Canada and particularly in Saskatchewan.

1. Literature Review

1.1 The Evolution of Risk Assessment

The field of risk assessment has evolved considerably over the years due to the realization that accurately assessing risk has significant implications for offender management, treatment planning, and release decision-making (Wong, Olver, & Stockdale, 2009). Early risk measures relied on static or unchangeable factors (e.g. criminal history) to predict risk. These instruments, however, were not designed specifically to guide the provision of treatment and they are unable capture change. More recently, dynamic factors, which have the capacity to change through intervention or experience, have been incorporated into assessment tools. Risk itself is arguably a dynamic construct with the potential for change. Not only does research demonstrate that dynamic factors predict recidivism equally well as static factors, but they also identify targets for intervention and assess to what extent treatment gains correspond to potential reductions in risk (Wong et al., 2009).

Bonta (1996) described this evolution in terms of generations of risk assessment. The first generation, referred to as professional judgment, comprises non-actuarial, unstructured assessments of risk for offending. A variation of this approach, structured clinical judgment, reflects a decision based on a review of specified items, but lacks a validated mechanical system linking scores to decisions. The second generation involves empirically based, but atheoretical, actuarial risk scales composed of static factors. Actuarial approaches involve explicit procedures for combining information, which is then linked to empirically determined probability figures. Third generation risk assessments, referred to as risk-needs instruments, include dynamic risk factors or criminogenic needs. They are empirically based and theoretically informed, sensitive to changing circumstances, and provide treatment targets designed to reduce risk when addressed through programming. Finally, more recently developed fourth generation instruments include risk-needs assessments and case management plans; they inform the process of risk management, the selection of intervention methods and treatment targets, and the assessment of rehabilitation progress and treatment-related change. In this manner, fourth generation risk instruments guide service delivery through intake to post-case closure follow-up (Andrews, Bonta, & Wormith, 2006). The Violence Risk Scale - Sexual Offender version (VRS-SO; Olver, Wong, Nicholaichuk, & Gordon, 2007) provides an example of a fourth-generation risk assessment measure (Campbell, French, & Gendreau, 2009).

1.2 Recidivism among Sex Offenders

One of the primary goals of risk assessment is the attempted prediction, or estimation, of recidivism. Bonta, Dauvergne, and Rugge (2003) suggested that recidivism information is valuable for all facets of the criminal justice system; the police, the courts, crime prevention, and corrections, including correctional decision-making and interventions. The reduction of criminal behavior is the primary concern of many correctional efforts. In conjunction with the Solicitor General Portfolio Corrections Statistics Committee, they examined the recidivism rates of Canadian federal offenders. Recidivism was defined as "any new conviction for an offense committed within two years of release from prison" (p. iii). Samples were selected from all releases from federal penitentiaries during the fiscal years 1994/95, 1995/96, and 1996/97. The reconviction rates for these years, respectively, were as follows. Any reconviction: 44.0%, 42.8%, and 40.6%. Nonviolent reconviction accounted for the majority: 30.2%, 29.8%, and 27.6%. Violent crimes were relatively infrequent and sexual crimes, a subset of violent crimes, were even more infrequent. The violent reconviction rate was approximately 13% for all three cohorts and the sexual reconviction rates were 0.7%, 1.0%, and 1.7% respectively. According to these rates, from 1994 to 1997, nonviolent reconviction decreased, violent reconviction remained constant, and sexual reconviction increased.

Harris and Hanson (2004) specifically examined sexual recidivism among adult male sex offenders, using data from 10 follow-up studies (N = 4,724) from Canada, the United States, England and Wales. They reported that most of the offenders in this study did not receive "effective treatment" (p. 11). Recidivism was expressed as new charges or convictions for sexual offenses. The authors noted that charges and convictions were combined given the similarity in recidivism rates for the studies that used only convictions and those that used charges and convictions. They further noted that these combined rates would more closely approximate reconviction rates than re-arrest rates given that there were relatively few charges that did not result in conviction. Recidivism estimates were calculated at 5, 10, and 15 year intervals. The overall recidivism rates were: 14%, 20%, and 24% respectively. The rates were similar for rapists (14%, 21%, and 24%) and child molesters (13%, 18%, and 23%). Among child molesters, however, there were significant differences: extrafamilial boy-victim child molesters demonstrated the highest rates (35% after 15 years) and incest offenders demonstrated the lowest rates (13% after 15 years). Other notable findings were that offenders with a prior

sexual offense conviction recidivated at double the rate of first-time sex offenders (19% vs. 37% after 15 years) and offenders older than age 50 recidivated at half the rate of younger offenders (12% vs. 26% after 15 years). Harris and Hanson (2004) remarked that, consistent with the risk principle, all sex offenders are not equally likely to reoffend and should not, therefore, be treated the same. Further, combining risk markers into structured risk scales improves predictive accuracy.

1.3 Risk Assessment with Sex Offenders

1.3.1 Risk factors for sexual recidivism.

Key to understanding and ultimately predicting recidivism among sex offenders is identifying and assessing risk factors related to its occurrence. Hanson and Bussière (1998) conducted a quantitative review of the literature on sex offender recidivism, including 61 follow-up studies (N = 23,393), to identify the factors most predictive of outcome. The average follow-up time was 4 to 5 years. On average, the sexual offense recidivism rate was 13.4% (18.9% for rapists, 12.7% for child molesters); the nonsexual violence recidivism rate was 12.2% (22.1% rapists, 9.9% child molesters); and the rate of general (any) recidivism was 36.3% (46.2% rapists, 36.9% child molesters). The findings based on reconvictions were equivalent to those based on other recidivism measures (e.g., arrests, self-reports, and parole violations). Results were described using correlations (i.e., r), where r greater than .30 was considered large, r greater than .20 moderate, and r between .10 and .20 small. Results were described according to the following categories: demographic factors, general criminality, sexual criminal history, sexual deviancy, clinical presentation and treatment history, developmental history, psychological maladjustment, and other psychological problems.

Regarding sexual offense recidivism, significant demographic predictors were found to be: age (young) and marital status (single; r = -.13 and .11 respectively). Significant criminality and criminal history predictors included: antisocial personality disorder and total number of prior offenses (r = .14 and .13 respectively); prior sexual offenses (r = .19), stranger, extrafamilial, and male victims, early onset of sexual offending, and diverse sexual crimes (r = .10; range from r = .10 to .19). Measures of sexual deviancy were found to be the strongest predictors, including: sexual interest in children and boys as measured by phallometric assessment (r = .32 and .14 respectively) and any deviant sexual preference (r = .22). Failure to complete treatment was a moderate predictor (r = .17), as was personality disorders (r = .16).

Regarding nonsexual violent recidivism, significant predictors included: age (r = -.24), minority race (r = .23), single marital status (r = .10), nonsexual criminal history (r = .11 to .22), antisocial personality disorder (r = .19), and rapist (compared to child molester) sex offender type (r = .23). Many of the predictors of general recidivism were similar: age (r = -16), single (r = .11), minority race (r = .10), nonsexual criminal history (r = .20 to .28), and antisocial personality disorder (r = .16). Force/injury to victim was positively associated (r = .13), and related child victim was negatively associated (r = -.12), with general recidivism. Additional risk factors for general recidivism were: premature treatment termination (r = .20), denial of sexual offense (r = .12), low motivation for treatment (r = .11), personality disorders (r = .21), and alcohol abuse during the offense or generally (r = .12 and .11).

Comparisons were conducted across the following broad domains: criminal lifestyle, sexual deviance, psychological maladjustment, negative clinical presentation, and treatment attrition. Sexual deviance and, to a lesser extent, criminal lifestyle predicted sexual recidivism (r = .19 and .12 respectively). Nonsexual violent and general recidivism were predicted by criminal lifestyle (r = .16 and .21 respectively). Psychological maladjustment was unrelated to any form of recidivism. Negative clinical presentation was related to general recidivism (r = .15), but not sexual recidivism, and there was insufficient information regarding nonsexual violent recidivism. Treatment attrition predicted sexual and general recidivism (r = .17 and .20 respectively).

Hanson & Bussière (1998) further examined combinations of variables (i.e., risk scales) and found that the statistical method (i.e., optimal weights selected by statistical algorithms) outperformed the clinical method (i.e., information weighted by clinical judges) for all types of recidivism (e.g., r = .46 compared to .10 respectively for sexual recidivism). There was insufficient information to quantitatively examine objective risk scales (i.e., weights assigned in advance based on theory or previous statistical analyses). The authors suggested that sexual offending differs from other offending and, consequently, risk assessment should separately consider sexual and nonsexual recidivism. Further, the assessment of sexual recidivism risk should consider factors specifically linked to sexual offending, using validated actuarial risk scales that incorporate dynamic (i.e., changeable) risk factors.

In recent years, researchers have increasingly focused on examining dynamic risk factors due to the clinical necessity of understanding and changing recidivism risk. There is currently a

general consensus (Hanson & Morton-Bourgon, 2005) that sexual recidivism is associated with the broad domains of deviant sexual interests (i.e., enduring attractions to sexual acts that are illegal or highly unusual) and antisocial orientation/lifestyle instability (i.e., antisocial personality, antisocial traits, and rule violation). Hanson and Morton-Bourgon (2004, 2005) conducted a meta-analysis of 82 recidivism studies, with a sexual recidivism rate of 13.7% and an average follow-up time of 5 to 6 years. Outcome results were presented in terms of Cohen's *d* effect sizes, where *d* values of .20 are considered small, .50 medium, and .80 large (Cohen, 1992). They identified sexual deviancy and antisocial orientation as the strongest predictors of sexual recidivism among sexual offenders (*d* = .30 and .23 respectively). Sexual attitudes and intimacy deficits demonstrated small, but significant relationships to sexual recidivism (*d* = .16 and .15 respectively). Antisocial orientation was the strongest predictor of violent non-sexual, violent (including sexual), and any recidivism (*d* = .51 to .54). New empirically established dynamic risk factors were identified, including sexual preoccupations, conflicts in intimate relationships, hostility, emotional identification with children, and attitudes tolerant of sexual assault (Hanson & Morton-Bourgon, 2004, 2005).

Hanson and Morton-Bourgon (2005) further examined the efficacy of selected predictors of sexual recidivism. The most promising dynamic risk factors and targets for intervention were as follows: any deviant sexual interest (*d* = .31), sexual preoccupations (*d* = .39), antisocial personality disorder (*d* = .21), Psychopathy Checklist-Revised (PCL-R; Hare, 2003; *d* = .29), general self-regulation problems (*d* = .37), employment instability (*d* = .22), and hostility (*d* = .17). Potentially misleading risk factors with negligible relationships to recidivism were also identified in the areas of negative family background (e.g., childhood neglect or abuse), internalization of psychological problems (e.g., loneliness, low self-esteem), and poor clinical presentation (e.g., lack of victim empathy, denial, low motivation). Overall, these findings confirmed sexual deviancy and antisocial orientation as major predictors of sexual recidivism and extended the list of relevant dynamic risk factors.

1.3.2 Domains of sex offender risk and need.

Consistent with Hanson and Bussière's (1998) and Hanson and Morton-Bourgon's (2005) meta-analytic findings, Doren (2004) presented systematic review findings in support of a multidimentional model for sexual recidivism risk. He delineated multiple risk dimensions and risk factors within those dimensions as well as ways to assess them. Specifically, he provided

evidence for at least two dimensions related to sexual recidivism risk, entitled sexual deviance and psychopathy/general criminality. Examples of ways to assess sexual deviance included penile plethysmography, the Rapid Risk Assessment for Sex Offense Recidivism (RRASOR; Hanson, 1997), and diagnosis of pedophilia. Examples of ways to assess psychopathy/general criminality included the Static-99 (Hanson & Thornton, 1999), the PCL-R, and diagnosis of antisocial personality disorder. Doren cited some evidence for a third pathway, potentially described as "detachment" or "immature" and including such variables as single, stranger victim, young age, nonsexual violence during index offense, and treatment resistance/failure. Doren suggested that, based on these findings, risk for sexual recidivism is multidimensional, involving multiple pathways, and may best be assessed by examining the dimensions individually (e.g., using separate instruments).

Thornton (2002) reviewed the literature on dynamic risk factors for sexual offending and identified four domains into which these factors seemed to fall, entitled: Sexual Interests (i.e., the direction and strength of sexual interests), Distorted Attitudes (i.e., beliefs about offenses, sexuality, or victims used to justify sexual offending), Socioaffective Functioning (i.e., ways of relating to others and motivating emotions related to interpersonal interactions, including inadequacy, emotional congruence with children, lack of emotionally intimate relationships with adults, and aggressive thinking), and Self-Management (i.e., planning, problem-solving, and regulating impulses). Thornton specified that Structured Risk Assessment (SRA) involves Static Assessment, Initial Deviance Assessment (IDA), Evaluation of Progress, and Risk Management, and that the dynamic domains identified comprised the IDA.

Thornton (2002) validated his four identified domains (Sexual Interests, Distorted Attitudes, Socioaffective Functioning, and Self-Management) on a sample of 158 child molesters and found that sexual recidivists (i.e., "Repeaters") scored significantly higher on three of the domains (excluding Sexual Interests) than non-recidivists. Subsequently, he combined these psychometric indicators into an overall Deviance Classification, classified participants as Low, Moderate, or High Deviance, and scored them on the Static-99. The Deviance Classification significantly predicted sexual recidivism (AUC = .78), as did the Static-99 (AUC = .92). The Static-99 was moderately corrected with the IDA (r = .30) and both the Static-99 and IDA independently predicted sexual recidivism. Craig, Thornton, Beech, and Browne (2007) examined the SRA framework, including the four deviancy domains, the Psychological Deviance

Index (PDI), and the Static-99, with a sample of 119 adult male sexual offenders. The Sexual Interests domain and PDI both predicted sexual reconviction independent of the Static-99. The Distorted Attitudes and Self-Management domains also attained moderate predictive results. These results supported the SRA framework and the premise of combining relevant dynamic factors with static assessment for improved predictive validity.

Allan, Grace, Rutherford, and Hudson (2007) explored the relationship between dynamic risk factors and sexual recidivism among a sample of 495 child molesters treated at a prison-based program in New Zealand between 1989 and 2001. Participants completed a self-report psychometric test battery pre- and post-treatment, however only pre-treatment data was presented. The Static-99 was also completed for all participants. The authors factor-analyzed the test battery data and identified four dimensions consistent with previous literature (e.g., Thornton, 2002), described as: Social Inadequacy, Sexual Interests, Anger/Hostility, and Pro-Offending Attitudes. The four dimensions were combined to create an Overall Deviance score. Each dimension, or factor, including the Overall Deviance score, significantly predicted sexual recidivism (AUC values ranged from 0.60 to 0.76). Controlling for static risk, Sexual Interests, Pro-Offending Attitudes, and Overall Deviance remained significant predictors. The authors indicated that the results provided support for the following conclusions: the factors identified represent dynamic risk factors for sexual recidivism; psychometric measures can validly assess such factors; and dynamic factors incrementally add to the predictive ability of static measures.

1.3.3 A review of selected sex offender risk assessment tools.

Advancing from Hanson and Bussière's (1998) examination of recidivism predictors and prediction methods, Hanson and Morton-Bourgon (2009) conducted a meta-analysis of 118 prediction studies and examined the relative predictive accuracy of several different specialized and general instruments for use with sex offenders. Based on the historical categorization of clinical and statistical/actuarial risk prediction, Hanson and Morton-Bourgon (2009) examined four ways of structuring risk assessments: empirical actuarial, clinically adjusted actuarial, mechanical, and structured professional judgment (SPJ). Empirical actuarial measures have a table linking total scores to recidivism probabilities, whereas mechanical measures do not; they also contain items which are selected based on direct analyses of specific data sets, whereas the items of mechanical measures are selected according to theory. Hanson and Morton-Bourgon (2009) found that, for the prediction of sexual recidivism, the most accurate approaches were

empirical actuarial measures designed for sexual recidivism and any recidivism, and mechanical measures designed for sexual recidivism. The accuracy of SPJ was intermediate between actuarial measures and unstructured professional judgment. The authors noted that the development of actuarial measures containing clinically relevant, causal risk factors was necessary to the future of sexual offender risk assessment. Causal risk factors are dynamic variables that precede an outcome (e.g., sexual offending) whereupon manipulation of the variables (e.g., via treatment) is associated with changes in the outcome (e.g., reduced sexual offending; Kraemer et al., 1997). Hanson and Morton-Bourgon (2009) cited the VRS-SO as being the closest example of such a measure for use with sex offenders to date. They remarked that further research was required to replicate the predictive accuracy of these tools and to understand what is changing during treatment.

Numerous sex offender specific risk assessment measures have been developed with the aim of achieving the most accurate prediction of recidivism possible. Further, clinicians are increasingly becoming aware of the necessity to measure and report changes in violence risk, thus dynamic factors have become an important part of violence risk assessment practice (Mills, 2005). A dynamic actuarial approach to risk estimation has the advantages of an actuarial measure while overcoming the drawback of relying primarily on static factors; that is, it has the potential to indicate where to intervene with clients and when risk has meaningfully changed (Mills, 2005). Many risk assessment measures now either incorporate or consist entirely of dynamic risk factors.

1.3.3.1 SONAR and STABLE 2000/2007.

Hanson and Harris (2000) aimed to identify dynamic risk factors that could be useful for the treatment and community supervision of sexual offenders. Information was collected on 208 sexual offense recidivists and 201 nonrecidivists through interviews with community supervision officers and file reviews. Hanson and Harris (2000) observed substantial differences between the sexual offenders who sexually recidivated while on community supervision and the comparison group of nonrecidivists. The recidivists were significantly more likely than the nonrecidivists to exhibit the following dynamic risk factors: unemployment, abuse of drugs and/or alcohol during the course of supervision, decreased mood just prior to committing a new offense, more negative than positive social influences, intimacy problems (no intimate partner, relationship conflicts), lack of remorse, justification of sexual crimes, sense of entitlement, lack of avoidance

of high risk situations, creating access to potential victims, socially deviant sexual activities, chaotic and antisocial lifestyle, and lack of cooperation with supervision. This research provided guidance in terms of improving the treatment and community supervision of sexual offenders, suggesting treatment targets and factors to be routinely evaluated during supervision.

Hanson and Harris (2001) then examined how well these dynamic risk factors could be organized into a structured risk assessment. They developed the Sex Offender Need Assessment Rating (SONAR), the predecessor of the STABLE 2000 and then the STABLE 2007. The items were divided into the following factors: intimacy deficits, negative social influences, attitudes tolerant of sexual offending, sexual and general self-regulation, substance abuse, negative mood, anger, and victim access. Their aim was to present a risk scale that could be used to evaluate change in risk among sexual offenders. The SONAR showed adequate internal consistency and moderate ability to differentiate between recidivists and nonrecidivists, even after controlling for static risk indicators such as age, intelligence, and Static-99 scores. Dynamic factors were rated by probation and parole officers for three time periods: ever, T_2 (1 month preceeding the recidivism event or the preceding month of supervision for nonrecidivists) and T_1 (a control period of 6 months earlier). Reported changes in dynamic factors signaled changes in risk for recidivism after controlling for static factors. These studies demonstrated the importance of dynamic factors in risk assessment and suggested not only that risk factors can change, but that this change can be measured and may indicate change in recidivism risk.

In a three-year community follow-up study of 997 sex offender probationers (the Dynamic Supervision Project), Hanson, Harris, Scott, and Helmus (2007) examined the predictive accuracy of the Static-99 (a brief static actuarial tool) and the STABLE 2000 (a dynamic risk measure with 16 items). They found that tools which utilize dynamic risk factors to assess and track changes in risk status achieved greater predictive power than their counterparts that assessed only static risk. The static risk factors (assessed using the Static-99) showed moderate relationships with the recidivism outcomes, but the dynamic risk factors (assessed using the STABLE 2007, the revised version of the STABLE 2000) made significant incremental contributions for all types of recidivism. Dynamic actuarial instruments have the capability to assess changes in risk-relevant factors, for instance from pre- to post-treatment, and concomitant changes in the likelihood of recidivism.

1.3.3.2 Violence Risk Scale - Sexual Offender version.

The Violence Risk Scale - Sexual Offender version (VRS-SO; Wong, Olver, Nicholaichuk, & Gordon, 2003)) is a clinician-rated scale comprised of empirically and conceptually derived static and dynamic items linked to sexual recidivism as well as a modified application of the Transtheoretical Model of Change (TTM; Prochaska, DiClemente, & Norcross, 1992). The VRS-SO was designed to assess and predict risk for sexual recidivism, to inform the delivery of treatment, and to measure and link treatment changes to recidivism. Dynamic items identify treatment targets, while stages of change assess treatment readiness and change. Validation of the VRS-SO was conducted on a sample of predominantly rapists who had participated in a high intensity sex offender treatment program in Canada. Results of the validation study indicated that the VRS-SO had acceptable interrater reliability. A factor analysis of the dynamic items suggested three factors labeled Sexual Deviance, Criminality, and Treatment Responsivity. Static, dynamic, total, and factor scores each significantly predicted sexual recidivism. Concurrent validity was demonstrated between the VRS-SO static, but not dynamic, items and the Static-99, suggesting that the dynamic items may capture variance in sexual recidivism not captured by the Static-99. The dynamic total score contributed significant incremental predictive validity over and above the Static-99 and the VRS-SO static total score. Positive changes in dynamic items were related to lower rates of sexual recidivism. In practical terms, the average total change score of approximately 2.5 demonstrated across the sample would translate into an overall predicted reduction in the probability of sexual recidivism of 25%, after statistically controlling for risk. These results supported the utility of the VRS-SO to inform treatment, measure change, and predict sexual recidivism. However, there is a continued need for these findings to be cross-validated on different samples of treated sex offenders to evaluate the generalizability of the results (Olver et al., 2007). The VRS-SO has also never been compared to other measures of offender treatment readiness and change.

Beggs and Grace (2010) conducted an independent validation of the VRS-SO on a sample of 218 child molesters (20.6% of which were of Maori descent) who received prison-based treatment in New Zealand between 1993 and 2000. Their findings supported the initial validation work by the VRS-SO developers (Olver et al., 2007). The revalidation study found good interrater reliability, evidence of concurrent validity with the Static-99, and good predictive validity of scale scores and risk categories with regard to sexual recidivism. As in the initial

validation study, the dynamic scale proved to be a significant predictor of sexual recidivism after controlling for the static scale. In fact, the revalidation study found that neither the VRS-SO static scale nor the Static-99 significantly contributed to the predictive validity for sexual recidivism once the dynamic scale was controlled for. These results extended the validation of the VRS-SO to a different culture, geographical location, and lower risk sample. They also highlighted the potential for treatment that targets these dynamic variables to be efficacious and to impact rates of recidivism.

The construct validity of the VRS-SO has also been examined in terms of its utility for measuring the Sexual Deviance construct (Canales, Olver, & Wong, 2009). The predictive validity of sexual deviance for sexual recidivism has been documented using phallometrically assessed sexual interest, clinician-rated psychometric measures (e.g., the Screening Scale for Pedophilic Interest, SSPI), and items from sex offender risk assessment tools (e.g., the Sexual Violence Risk-20, SVR-20). Convergent validity of the Sexual Deviance factor was demonstrated through significant correlations between the factor and phallometric indices and concurrent validity was demonstrated through significant correlations with the SSPI. Child and pubescent phallometric indices significantly predicted sexual recidivism in the aggregate sample and the Sexual Deviance factor significantly predicted among the child-victim subgroup, whereas the SSPI did not predict sexual recidivism. These findings provided promising support for the validity of the VRS-SO Sexual Deviance factor for measuring sexual deviance.

1.3.3.3 Treatment Readiness, Responsivity, and Gain Scale: Screening Version.

While not specifically a risk assessment measure, the Treatment Readiness, Responsivity, and Gain Scale: Short Version (TRRG:SV; Serin, Kennedy, & Mailloux, 2005) is a clinical rating scale designed for use with different types of offenders referred to correctional programs. It provides a systematic approach to the dynamic assessment of offender change and distinguishes among offenders in terms of treatment needs, program performance, and subsequent adjustments to risk. The scale was developed to assist in resource allocation for correctional programming and to evaluate program performance. It was organized to consider treatment readiness, offenders' interpersonal style (responsivity), and treatment gain. The developers postulated that treatment readiness and interpersonal style are dynamic and that either change scores (from pre- to post-program) or threshold scores (i.e., final level attained) might be predictive of treatment gain and post-program outcome. While the results indicated that the

TRRG:SV is reliable and sensitive to change in offender readiness and responsivity, it has yet to be tested if the change scores predict treatment gain and post-program outcome. Further, while initial data regarding sexual offenders was presented, the sample size was quite low (n = 39). Inter-rater reliability and concurrent and predictive validity data are still required, in addition to a cross-validation of the findings with different samples, including a larger sample of sexual offenders (Serin, Mailloux, & Kennedy, 2007).

1.3.4 Risk assessment and the aging sex offender.

Studies have demonstrated that actuarial risk assessment measures may not adequately account for advanced age and related declines in recidivism risk among older offenders (Helmus, Thornton, Hanson, & Babchishin, 2012). For example, using data from eight samples of sexual offenders (N = 3,425), Hanson (2006) found that older offenders demonstrated lower sexual recidivism rates than expected based on their Static-99 scores and that beginning at age 40, recidivism rates subsequently declined with further increases in age. This is particularly relevant given that the proportion of older offenders has been increasing in prison populations (Helmus et al., 2012). In a Correctional Services of Canada (CSC) Research Report, Boe, Nafekh, Vuong, Sinclair, and Cousineau (2003) compared federal inmate population profiles from March 1997 and March 2002. This revealed that the average age of men in federal custody increased; more specifically, the proportion of offenders under age 30 decreased from 32% to 30% between these years. More recently, the CSC has indicated that the increase in its elderly offender population has continued; in 2011-2012, 21% of the federal incarcerated offender population was aged 50 or over, which is a notable increased from 11.5% in 1997-1998 (Corrections and Conditional Release Statistical Overview, 2004, 2012).

Previous meta-analyses and systematic reviews have suggested that young age is related to higher rates of sexual and violent recidivism (e.g., Doren, 2004; Hanson & Bussière, 1998; Harris & Hanson, 2004). Further, the finding that criminal involvement declines with age is strongly supported by the literature, including among sexual offenders (Helmus et al., 2012). Hanson (2002) examined the relationship between age and sexual recidivism among adult male sexual offenders (10 studies, N = 4,673). The overall sexual recidivism rate was 17.5% (8.4% for incest offenders, 17.1% for rapists, and 19.5% for extrafamilial child molesters). The average follow-up time was not reported, but ranged from 2 to 23 years. The rapists were significantly younger than the child molesters (rapists: M = 32.1, SD = 8.9; extrafamilial child

molesters: M = 37.1, SD = 11.5; incest offenders: M = 38.9, SD = 9.9). The overall recidivism rate steadily and linearly declined with age. However, the relationship between age and recidivism differed according to sex offender type. As with the total sample, the recidivism rate for rapists steadily decreased with age. Extrafamilial child molesters demonstrated relatively little decline in recidivism until after the age of 50. Intrafamilial child molesters demonstrated recidivism rates comparable to rapists and child molesters in the 18 to 24 age category and then generally low rates subsequently. Only 3.8% of offenders released after age 60 recidivated.

Nicholaichuk, Olver, Gu, and Wong (2013) examined the interrelationship of age, risk, and recidivism in a national sample of 2,401 male federally incarcerated sexual offenders. Participants were released between 1997 and 2000 and followed-up for an average of 12.0 years. The focus of the study was on participants who were 50 years or older at the time of release (n = 542). Risk was assessed with the brief actuarial rating scale (BARS) and outcome consisted of sexual and violent reconviction. Nicholaichuk et al. (2013) found lower base rates of recidivism among older age groups for both outcomes and a steady decline as a function of age. The relationship between age and recidivism was small to moderate in magnitude for sexual recidivism and moderate to large in magnitude for violent recidivism. Age was significantly negatively correlated with sexual and violent recidivism across sex offender types. Older offenders ($\geq$ 50 years) tended to obtain lower actuarial risk scores than younger offenders (under 50 years), consistent with their lower recidivism rates, and age was significantly negatively correlated with risk (r = -0.21, $p < .001$). Sexual and violent recidivism base rates were lower for older offenders compared to younger offenders across risk scores, with the exception of a small group of older offenders in the highest risk band who had higher rates of sexual recidivism than younger offenders. Nicholaichuk et al. (2013) found that the persistent sex offenders were characterized as having male victims, official sex offense histories, four or more prior sentencing dates, and single marital status.

Consistent with Hanson (2002), Dickey, Nussbaum, Chevolleau, and Davidson (2002) found that the relationship between age and sexual recidivism was affected by sex offender type. In their sample of 168 sexual offenders, they found that, compared to pedophiles and sexual sadists, rapists showed the greatest decline in sexual recidivism after the age of 40. Among the older adult recidivists (age 40 to 70 years, n = 50), 60% were pedophiles, 30% were sadists, and 10% were rapists. There is some evidence that the relationship between age and sexual

recidivism may be affected by additional variables as well. For instance, in a sample of 752 sexual offenders followed up for 10 years, Thornton (2006) found a significant inverse linear relationship between age and sexual recidivism only when prior sexual sentencing occasions were controlled for. Craig (2011) examined the effect of age on sexual and violent reconviction among 131 offenders (85 sex offenders and 46 violent offenders) grouped into four age bands (≤24, 25-34, 35-44, and ≥45 years) and followed up for 5 years. He found an inverse linear relationship between age and violent, violent and sexual combined, and any reconviction. For sexual reconviction, however, there was a plateau effect in the middle-age band and an increase with the oldest age band. Of note, the sample sizes in the oldest age band ranged from $n = 0$ to 3. Nevertheless, Thornton (2006) also observed a plateau in the middle-age band (i.e., age 25 to 59) among those with 2 prior sexual sentencing occasions. While not necessarily straightforward, there appears to be ample support for a relationship between age and sexual recidivism.

Helmus and colleagues (2012) aimed to examine whether the Static-99 and Static-2002 adequately accounted for the above described relationship between age at release and recidivism (primarily sexual, but also violent, recidivism) and to contribute to the literature on the relationship between age and crime. Only the Static-99 results will be described here given the scope of the present study. Nevertheless, the results for both measures were broadly comparable. Their total sample included 24 subsamples (N = 8,390 with Static-99 scores), from 8 different countries, and comprised a combination of treated and untreated sexual offenders. The average age at release was 40 years (SD = 12, range from 18 to 84). Offenders were released between 1957 and 2007, with 81% released in 1990 later. Recidivism was defined as charges (13 samples) and convictions (11 samples); consistent differences in recidivism rates based on recidivism criteria were not found (Helmus 2009, as cited in Helmus et al. 2012). The average Static-99 score was 3.0 (SD = 2.2). The average follow-up time was 8.2 years (SD = 5.0). The average sexual recidivism rate was 12.4% (11.1% after 5 years, 16.6% after 10 years) and violent recidivism rate was 23.9% (20.7% after 5 years, 32.5% after 10 years). Offenders were classified as rapists or child molesters (information available for 16 samples).

Helmus et al. (2012) found that age was significantly negatively correlated with Static-99 scores, indicating that older offenders had lower static risk, despite having more years to offend, than younger offenders. The authors examined recidivism rates by age group (<30, 30-39.9, 40-49.9, 50-59.9, 60-69.9, and 70+) and Static-99 risk category (low, moderate-low, moderate-high,

and high). They found that sexual and violent recidivism rates increased with each risk category and decreased with each age group. Age at release was significantly negatively related to sexual and violent recidivism after controlling for Static-99 scores, with the effect stronger for violent recidivism. Given the incremental effect of age and the indication that the measure did not sufficiently account for the relationship between age and recidivism, adjustment of the scale was undertaken.

New age weights were selected based on a number of pre-specified principles and informed by several different analytic techniques. The age bands and corresponding item scores are as follows: 18-24.9, 1; 25-34.9, 1; 35-39.9, 0; 40-49.9, -1; 50-59.9, -1; 60+, -3. Total scores for the revised measure, termed the Static-99R, range from -3 to 12 (compared to 0 to 12 for the Static-99). Comparing the original and revised measures, the Static-99R demonstrated an increase in predictive accuracy for sexual and violent recidivism, with the differences reaching statistical significance for violent, but not sexual, recidivism. Age no longer added incrementally to the prediction of sexual recidivism, however, it did for violent recidivism, although the effect was reduced. Sexual recidivism rates per Static-99R risk category were fairly similar across the age groups. For violent recidivism, there remained a decline, although less marked, in recidivism rates for older age groups. Sexual recidivism rates predicted by the Static-99R were not significantly different from the observed rates, whereas they were with the Static-99. For violent recidivism, both measures underestimated recidivism for younger offenders and overestimated it for older offenders, although the discordance was smaller with the Static-99R. These results support previous findings that the relationship between age and offending is stronger for nonsexual violent compared to sexual offending (Hanson & Bussière, 1998). They also support revision of the Static-99 and the authors recommended switching to the revised age weights in future assessment.

1.3.5 An updated review of sex offender risk assessment: Findings and conclusions.

The literature on sexual offender risk assessment has rather consistently indicated that actuarial measures are superior to clinical judgment in predicting recidivism and including dynamic risk predictors can increase the predictive accuracy of static risk measures (Craig, Browne, Stringer, & Beech, 2005). Tully, Chou, and Browne (2013) systematically reviewed and compared the effectiveness of actuarial and structured professional judgment (SPJ) risk assessment tools in predicting sexual recidivism among adult male offenders. The authors

reviewed references published between 1980 and November 2011. After application of their inclusion and exclusion criteria (e.g., adult male population, sexual offender specific tools, sexual recidivism outcome, and study quality) 43 studies (N = 31,426) were included in the review. Almost half of the studies (21/43) were not included in Hanson and Morton-Bourgon's (2009) meta-analysis. Fifteen risk assessment tools were identified and reviewed, including static (53%) and dynamic (47%) measures. Outcome was predominantly defined as reconviction (23 studies). The majority of studies had a sample size of 100 or more participants and a minimum follow-up period of two years. Less than half, however, demonstrated good inter-rater reliability. The Static-99 was the most commonly evaluated tool, followed by the RRASOR. The Static-99 also received both the lowest and highest study quality scores. The highest mean quality score was allocated to the VRS-SO, although only two studies were included.

Tully et al. (2013) presented the predictive accuracy of the risk assessment tools using Area Under the Curve (AUC) and Cohen's *d* statistics based on Rice and Harris' (2005) specified equivalencies. That is, small effect: AUC = .556, d = .20; moderate effect: AUC = .639, d = .50; large effect: AUC = .714, d = .80. Of the 15 risk assessment tools reviewed by Tully et al. (2013), only the VRS-SO and Structured Risk Assessment (SRA; Thornton, 2002) achieved a mean AUC in the large effect size range (i.e., AUC ≥ 0.714). For the VRS-SO the mean AUC was 0.755 and for the SRA the mean AUC was 0.737. Notably, however, both tools were only evaluated by two studies each and may have been subject to developer bias. The Static-99 demonstrated the widest variability, with AUC values ranging from 0.570 to 0.920. All of the tools reviewed (except for the MsSOST-R) produced AUC values at least in the moderate effect size range. Overall, the two tools with the greatest predictive accuracy (i.e., the VRS-SO and SRA) were 'mechanical' tools (deemed to fall under the umbrella of SPJ), which comprise static and dynamic items as well as a method for producing a total score or risk level, but no linked recidivism base rates. Tully et al. (2013) discussed a number of biases present in the studies reviewed, including selection, measurement, and publication biases, as well as overlapping samples. Nevertheless, the findings support the development and use of actuarial risk assessment measures that contain dynamic factors, although they recommend that additional independent, non-developer led studies, particularly of the VRS-SO and SRA, are necessary. In applied terms, the appropriate selection and use of risk assessment tools serves a number of purposes, including resource allocation (e.g., level of supervision) and treatment prioritization.

Additionally, given increases in treatment provision and growing evidence of treatment effectiveness, it is necessary for risk assessment to capture treatment-related effects.

The assessment of risk and prediction of recidivism are crucial to the criminal justice system. However, reducing and preventing violence, including sexual violence, should be the ultimate goal of research aimed at addressing the issue of crime in society. Prevention has the potential to reduce crime and victimization. According to Douglas and Skeem (2005), the greatest challenge facing forensic practice is the development of methods to assess aspects of risk that are amenable to change (i.e. dynamic factors) as well as methods to reduce risk through treatment.

1.4 Treatment with Sex Offenders

The risk, need, responsivity (RNR) model is one influential model for the assessment and treatment of offenders (Bonta & Andrews, 2007). As its name suggests, the model is based on three principles: the risk principle asserts that the level of treatment services provided to the offender should match the offender's risk to reoffend; that is, treatment should focus on higher risk offenders. The need principle states that the focus of treatment should be on criminogenic needs, or dynamic risk factors directly linked to criminal behavior. Finally, the responsivity principle specifies that, in order to maximize the offender's ability to benefit from services, the intervention should be tailored to the learning style, motivation, abilities, and strengths of the offender and based on cognitive social learning interventions, which have been found to be an effective way to teach people new behaviors (Bonta & Andrews, 2007). The RNR model highlights that good offender assessment involves more than simply making decisions about risk; it involves acknowledging that behavior change is an important aspect of life and can be facilitated through the delivery of appropriate intervention (Bonta & Andrews, 2007).

1.4.1 Results from meta-analysis.

While certain forms of intervention have been found to reduce recidivism rates among general offenders, the effectiveness of treatment for sexual offenders remains controversial (Hanson, Bourgon, Helmus & Hodgson, 2009). Given the low base rate of sexual recidivism, meta-analytic reviews offer an advantage in examining the effectiveness of treatment among sexual offenders, namely that they increase the statistical power to find effects by aggregating studies (Hanson et al., 2002). Meta-analytic reviews of sexual offender treatment have generally demonstrated positive effects in terms of lower recidivism rates among treated participants.

Hall (1995) conducted the first meta-analysis of sexual offender treatment outcome, including 12 studies, and found a small but significant overall treatment effect (r = .12) with an overall recidivism rate of 19% for treated sexual offenders and 27% for untreated sexual offenders. He also found that cognitive-behavioral and hormonal treatments were comparably effective and significantly more effective than behavioral treatments. Gallagher, Wilson, Hirschfield, Coggeshall, and MacKenzie (1999) meta-analyzed 25 studies and concluded that, overall, sexual offender treatment, particularly cognitive-behavioral approaches, resulted in lower sexual recidivism rates. Alexander (1999) reviewed 79 sexual offender treatment outcome studies and summarized the recidivism rates of treated and untreated sexual offenders in a quasi-meta-analysis (i.e., with no effect sizes or inferential statistics). Higher recidivism rates were reported for untreated offenders (17.6%) compared to treated offenders (13.2%), particularly those who completed relapse prevention-based programs (7.2%).

More recently, Hanson and colleagues (2002), as the Collaborative Outcome Data Project Committee, conducted a large-scale meta-analytic review of the literature on the effectiveness of psychological treatment for sexual offenders. They used data from 43 studies (N = 9,454), identified as of May 2000, that compared the recidivism rates of treated and untreated (or inadequately or inappropriately treated) sexual offenders. This dataset comprised almost twice the number of studies of the largest previous meta-analysis (conducted by Gallagher et al., 1999). The studies were published between 1977 and 2000, with the median publication year being 1996 and 23% being produced in 1999 or later. The majority of the studies related to adult male sexual offenders (4 examined adolescent sexual offenders). Regarding the 43 programs, 23 were institutional, 17 were community, and 3 were both. Treatment was provided between 1965 and 1999, with the majority (80%) occurring after 1980, and all but 3 programs were specialized for sexual offenders. Treatments were distinguished as "older" or "current," with "current" being considered any treatment still being offered (in 2000) and cognitive-behavioral treatments offered since 1980. Recidivism criteria included reconviction (8 studies), re-arrest (11 studies), and broader definitions (including parole violations, readmissions to institutions, and unofficial community reports; 20 studies). The median follow-up time was 46 months for treatment and comparison groups, with average follow-up periods ranging from 12 months to 16 years. Treatment effectiveness was described using odds ratio (OR), where values range from very

small (e.g., < .01) to very large (e.g., > 100), a value of 1.0 indicates no difference between groups, and smaller values indicate lower recidivism (i.e., treatment effectiveness).

Hanson et al. (2002) found that, for sexual recidivism, the treatment groups demonstrated significantly lower rates than the comparison groups overall (12.3% vs. 16.8%, OR = 0.81). Treatment dropouts demonstrated significantly higher sexual recidivism rates than treatment completers (OR = 0.47). Current treatments were significantly related to lower sexual recidivism rates (9.9% for the treatment groups vs. 17.4% for the comparison groups, OR = 0.60), whereas older treatments had no effect (OR = 1.19). Institutional and community treatments were both associated with lower sexual recidivism rates (OR = 0.52 and 0.56 respectively). For general recidivism, the treatment effects were similar. Overall, treated offenders demonstrated significantly lower rates of general recidivism than untreated offenders (27.9% vs. 39.2%, OR = 0.56), as did treatment completers compared to treatment dropouts (OR = 0.38). Effects were higher for current treatments than older treatments, with current treatments significantly related to lower general recidivism rates (32.3% vs. 51.3%, OR = 0.57), while the effects of older treatments failed to reach statistical significance (OR = 0.84). Community treatments demonstrated a stronger positive effect on general recidivism compared to institutional treatments (OR = 0.20 vs. 0.79 respectively), although the latter results may have been influenced by the small number of contributing studies and significant variability among them. This meta-analysis supported previous findings that treatment, particularly current and cognitive-behavioral treatment, is significantly related to lower rates of sexual and general recidivism among sexual offenders.

Shortly after Hanson et al. (2002), Lösel and Schmucker (2005) conducted a meta-analysis of the effectiveness of treatment for sexual offenders. They amassed 69 studies (N = 22,181), including 80 comparisons of treated and untreated offenders, reported up to June 2003, making their database on the outcome of sex offender treatment the most comprehensive to date. The majority of studies were from North America. Three-quarters were published since 1990, however, three-quarters of program implementation occurred before 1990. Half of the comparisons examined cognitive-behavioral programs, most programs were sexual offender-specific, and half took place in an institutional setting (prison or hospital; the other half was designated as outpatient or mixed). Over half of the comparisons included exclusively adults. Most programs combined offenders with different types of sexual offenses (child molestation,

then rape, were most frequent). The median sample size was 118. A randomized design was used in only 7 comparisons. Reconviction was the most common definition of recidivism (30%), followed by re-arrest and new charges. The average follow-up time was just over 5 years (63.54 months).

Lösel and Schmucker (2005) provided total mean effects of treatment for sexual, violent, and any recidivism. They used odds ratios (OR) as an effect size measure, where higher values indicate greater treatment effectiveness. The effects were similar and highly significant (at $p <$ .001) for all types of recidivism. For sexual recidivism, the average recidivism rate was 11.1% for treated groups and 17.5% for comparison groups (37% reduction; OR = 1.70). For violent recidivism, the rates were 6.6% and 11.8% for the treated groups and comparison groups, respectively (44% reduction; OR = 1.90). And for any recidivism they were 22.4% and 32.5% (31% reduction; OR = 1.67). Given the considerable heterogeneity of treatment effects, the authors conducted moderator analyses for sexual recidivism to examine the influence of select variables. Of note, physical interventions (i.e., surgical castration and hormonal medication) had larger effects than nonphysical/psychosocial interventions. Of the psychosocial interventions, only cognitive-behavioral and classical behavioral treatments had significant effects on sexual recidivism. The decade of program implementation was significantly related to effect size, but nonlinearly. Only sex offender-specific programs had a significant effect and, while not significant, there was a strong tendency for larger effects with outpatient compared to institutional treatment. While regular treatment completers demonstrated better effects than the control groups, treatment dropouts demonstrated significantly worse effects, with double the odds of recidivism (OR = 1.58 for regular completers and 0.51 for dropouts). The different indictors of recidivism did not systematically relate to outcome effects. Overall, these results demonstrated a positive and significant effect of treatment, notably sex offender-specific cognitive-behavioral treatment, which is consistent with the literature on both general and sex offender treatment.

While quantitative reviews appear to demonstrate an overall effectiveness of treatment in reducing recidivism among sexual offenders, there remains some contention regarding the matter. For example, Rice and Harris (2003) critiqued the meta-analysis by Hanson et al. (2002) and asserted that "the effectiveness of psychological treatment for sex offenders remains to be demonstrated" (p. 428). Regarding the Hanson et al. (2002) meta-analysis, Rice and Harris

(2003) indicated that, while the incidental assignment studies (k = 17) demonstrated positive treatment results, the random assignment studies (k = 4), which utilized a more rigorous methodology, did not. Rice and Harris (2003) acknowledged that "our own position tends to demand relatively high quality…before conclusions are warranted" (p. 429). They identified a set of criteria for minimally useful evaluation (including random assignment or matching) and indicated that the majority of the studies included in the Hanson et al. meta-analysis did not meet their criteria. Hanson et al. (2002) acknowledged that the strongest research designs involve the random assignment of offenders to treatment. However, they reported that there were very few such studies to date, citing only one random assignment study that examined a current treatment specific to sexual offending (the Sex Offender Evaluation and Treatment Project, SOTEP; Marques, 1999). Therefore, they reported that the Collaborative Outcome Data Project Committee opted to consider research studies using alternative methods rather than limit the review of sexual offender treatment to one, or very few, studies. Rice and Harris (2003) identified six studies of sex offender treatment that met their criteria and reported that the mean effect on sexual recidivism trended toward being detrimental. They concluded that there remains a dearth of knowledge regarding sex offender treatment, particularly from random assignment studies.

The Collaborative Outcome Data Committee (Beech et al., 2007) discussed that meta-analyses are particularly informative in the field of sexual offender treatment given the number of technical obstacles encompassed in this type of outcome research. These obstacles included the complexity of interventions, the long delays before outcome information is available, the heterogeneity of the sexual offender population, and the often small sample sizes. Nevertheless, as indicated by Beech et al. (2007), well-designed single studies provide important information as well and contribute to cumulative knowledge. Further, they specified that, while random assignment has been deemed the gold standard for comparing treatment and comparison groups, it has also been criticized for withholding treatment from clientele, which in the case of sex offenders is a potentially dangerous clientele. As such, the Committee asserted that for complex social interventions, it is widely accepted that alternative designs, including quasi-experiments and program evaluation, make important contributions to knowledge as well.

Finally, in response to such criticism about meta-analytic reviews lacking in quality outcome studies, Hanson et al. (2009) conducted an updated meta-analysis of 23 recidivism

outcome studies and examined whether the principles of effective interventions for general offenders (i.e., RNR) apply to sexual offenders as well. These are interventions that treat higher risk offenders, target criminogenic needs, and match treatment to the offenders' learning styles and abilities. Indeed, the sexual and general (any) recidivism rates were significantly lower for the treated sexual offenders than for the comparison groups (10.9% versus 19.2% for sexual recidivism; 31.8% versus 48.3% for any recidivism). Programs were more effective if they targeted criminogenic needs and were delivered in an engaging manner (i.e., adhered to the principles of need and responsivity). Though not significant, there were stronger treatment effects for the high risk offenders (consistent with the risk principle). In fact, the effectiveness of treatment at reducing recidivism increased according to the total number of principles adhered to. Risk for recidivism thus appears to be a dynamic factor with the potential to change when interventions are delivered appropriately.

1.4.2 Results from selected single treatment outcome studies: Considerations with respect to the principles of effective correctional intervention.

Olver and Wong (2013) provided an overview of high risk sex offender program characteristics in regards to their application of the RNR principles. They indicated some evidence that such programs target high risk offenders and provide high intensity services. For example, Correctional Service of Canada (CSC) high intensity sexual offender program referrals were found to be higher risk than low to moderate stream referrals, including significantly higher psychopathy and risk scores, more serious criminal histories, and earlier onset of sexual offending (Mailloux et al., 2003). High intensity programs had a greater concentration of treatment contact for a longer duration, for example, approximately 15 hours per week for 8 months in the CSC (CSC, 2009a). Similar treatment dosages were found internationally for high intensity sex offender programs (e.g., Australia's Custody-Based Intensive Treatment program and Sand Ridge Civil Commitment Centre in Wisconsin; Olver & Wong, 2013). A comprehensive review of North American sex offender treatment programs by McGrath, Cumming, Buchard, Zeoli, and Ellerby (2010) demonstrated that many programs resemble high intensity programs. The review found that most programs were cognitive-behavioral, administered in a group format (often supplemented with individual therapy), and addressed criminogenic and non-criminogenic needs. Olver and Wong (2013) noted that addressing non-criminogenic needs can be beneficial when done in tandem with criminogenic needs. Finally,

high risk sex offender programs have been found to accommodate responsivity considerations. For example, the Clearwater Program (CSC, Saskatoon) implemented adaptations for cognitively lower functioning offenders (Olver & Daniels, 2013). Additionally, CSC programs in general, including sex offender programs, have implemented adaptations to combine cognitive-behavioral and traditional healing approaches (CSC, 2009b).

Cortoni and Nunes (2007) assessed the effectiveness of the National Sexual Offender Program (NaSOP) in terms of reducing recidivism. The NaSOP was established in 2000, and implemented nationally by 2002, by the Correctional Service of Canada for low- and moderate-risk male sexual offenders. It is a cognitive-behavioral program designed to target criminogenic factors related to sexual offending, including cognitive distortions, deviant arousal and fantasy, social skills, anger and emotion management, empathy, and victim awareness, and to develop effective self-management skills. The study compared 347 sexual offenders who completed the NaSOP between 2000 and 2004 to 137 untreated sexual offenders drawn from Motiuk and Porporino's (1993) database. Sexual recidivism was defined as a new sexual charge or conviction. Violent recidivism included new violent and sexual offenses. Sexual recidivism risk as measured by the Static-99 and time of opportunity to reoffend were both significantly lower in the treated group than the comparison group. Cox regression analyses were conducted to control for these differences. The Static-99 was found to demonstrate good predictive validity for sexual (AUC = .72), violent (AUC = .77), and general (AUC = .77) recidivism.

Cortoni and Nunes (2007) used two different approaches to examine outcome. A cohort design compares a treated group from one time period to a comparison group from another time period. These results demonstrated a 68% reduction in sexual recidivism among the treated group compared to the comparison group, which tended toward statistical significance, likely due to a low base rate. The treated group demonstrated significantly lower rates of violent (83% reduction) and any (77% reduction) recidivism. A risk-band design compares the actual recidivism rate of a group to a recidivism rate projected from the norms of a risk assessment instrument (in this case the Static-99). The treated group demonstrated a significantly lower sexual recidivism rate (88% reduction) than expected, while the sexual recidivism rate of the comparison group did not significantly differ from what was expected. Given that the median year of release was 2003 for the treated group and 1992 for the comparison group, the authors examined associations between year of release and recidivism. They found that release year was

not significantly related to any type of recidivism for either the treated or comparison group, with one exception: for the comparison group, later release year was significantly associated with greater violent recidivism. The results of this study, consistent with meta-analytic research, indicate that cognitive-behavioral intervention programs targeting sexual offending behavior are effective at reducing recidivism among sexual offenders.

While Cortoni and Nunes (2007) examined a program for low- and moderate-risk sex offenders, a number of studies have examined high intensity programs for high risk sex offenders. These latter studies are particularly pertinent given that the present study involves examining risk, treatment-related change, and recidivism among participants who attended a high intensity correctional program.

Looman, Abracen, and Nicholaichuk (2000) assessed the effectiveness of the Regional Treatment Centre (Ontario) Sex Offender Treatment Program (RTCSOTP) in reducing recidivism. The RTC (Ontario) is a Correctional Service of Canada (CSC) psychiatric treatment facility. The RTCSOTP was started in 1973, designed for high risk and high need sexual offenders, and followed a cognitive-behavioral relapse prevention treatment model, thereby adhering to the risk, need, and responsivity (RNR) principles (Abracen, Looman, Ferguson, Harkins, & Mailloux, 2011). Looman et al. (2000) examined a sample of offenders who attended the RTCSOTP between 1976 and 1989, were released before 1992, and were followed-up until November 1996. A sample of 89 treated offenders was matched to a comparison group of 89 untreated offenders in the Prairie region of CSC on the following variables: age at index offense, date of index offense, and criminal history. The average follow-up time was 9.9 years. The treated group had a significantly lower sexual reconviction rate than the untreated group (23.6% vs. 51.7%, $p < .0001$), corresponding to a moderate effect size ($d = .48$), as well as a lower rate of recidivism overall (61.8% vs. 74.2%, $p < .07$). Regarding offenders with no sexual offense history, 20.9% of those treated sexually recidivated compared to 42.9% of those untreated. Regarding offenders with a sexual offense history, 26.1% of those treated sexually recidivated compared to 73.1% of those untreated. These results supported the effectiveness of the RTCSOTP in reducing sexual recidivism, particularly amongst the highest risk offenders.

More recently, Abracen et al. (2011) re-examined the effectiveness of the RTCSOTP. Sixty-four offenders treated at the RTCSOTP since 1994 were matched to 55 untreated sexual offenders assessed at a CSC institution in the Ontario region between 1993 and 1998 on the

following variables: age at index offense, total PCL-R (i.e., psychopathy) score, and sexual offender type. The Rapid Risk Assessment of Sexual Recidivism Scale (RRASOR) was scored for all offenders. The authors noted that, despite the matching procedure, the treated group was likely of higher need than the comparison group by virtue of their selection for the RTCSOTP as well as given that dropouts were retained in the treated sample but not the comparison one. Both treated and untreated groups received a variety of non-sexual offense-specific treatment, but no significant differences were observed between the groups. Both groups demonstrated low rates of sexual reconviction: 11.1% for the treated group (mean follow-up 9.4 years) and 9.1% for the comparison group (mean follow-up of 11.2 years). This difference was not significant, including when controlling for length of follow-up. Treated offenders were more likely to obtain RRASOR scores in the higher-risk ranges compared to untreated offenders (54.8% vs. 24.1%). Higher-risk treated offenders also evidenced lower than expected recidivism rates compared to the RRASOR normative group with a 10-year follow-up. The authors potentially attributed the comparably low recidivism rates between groups to the additional programming many offenders completed. They suggested that the RTCSOPT was effective in that the treated group was higher risk and need than the comparison group yet recidivated at a similar rate. Finally, consistent with previous RTCSOPT evaluation results, treatment was most effective with higher risk offenders. These RTCSOPT studies support the RNR principles of effective treatment and demonstrate reduced and relatively low rates of sexual recidivism among treated high risk, high need sexual offenders.

Nicholaichuk, Gordon, Gu, and Wong (2000) examined the effectiveness of the Clearwater Sexual Offender Treatment Program operated at the Regional Psychiatric Centre (RPC; Saskatoon, Saskatchewan) by the Correctional Service of Canada. The Clearwater Program accepts high risk, high need adult male sexual offenders and provides 6 to 8 months of treatment based on cognitive-behavioral treatment and relapse prevention theoretical orientations. The treated group comprised 296 offenders who completed the program between 1981 and 1996 and included 168 rapists (57%), 49 pedophiles (17%), 47 mixed offenders (both adult and child victims; 15%), and 32 child molesters (predominantly incest offenders; 11%). The stratified matched comparison group (matched on date of index offense, age at index offense, and criminal history) comprised 283 offenders; only the proportion of mixed offenders

was significantly different (lower) than the treated group. The average post-release follow-up time was 6 years.

The results demonstrated that 14.5% of the treated and 33.2% of the untreated offenders committed new sexual offenses ($p < .001$). First-time sex offenders recidivated less than repeat offenders. For both first-time and repeat offenders, treated offenders recidivated significantly less than untreated offenders. Treated offenders were less likely to return to prison than untreated offenders (e.g., 52% versus 71.7% for all sexual offenders). No significant between-group differences were observed for new nonsexual convictions. Analyzed according to sex offender type (where the sample sizes were large enough), 14.3% of the treated and 42% of the untreated rapists reoffended sexually; for pedophiles, the re-offense rates were 18.4% of treated and 61.9% of untreated. Survival analyses demonstrated that, over a period of 10 years, untreated offenders began reoffending earlier and continued at higher rates than treated offenders ($p < .001$). Criminal Career Profile slopes demonstrated a post-treatment or post-index offense reduction in the number of new crimes for both treated and untreated groups, but a greater reduction in the degree of violence for the treated group. Pre- to post-treatment comparisons were significant for the rapist, mixed, and pedophile groups, but not the incest group; this is consistent with the risk principle (Andrews & Bonta, 2003), which specifies that high intensity treatment is indicated for higher, but not lower, risk offenders. Overall, the study found that the Clearwater Sexual Offender Program was effective in terms of significantly reducing sexual recidivism among high risk first-time and repeat sexual offenders.

Of note, Hanson and Nicholaichuk (2000) discussed a problem with the novel method for identifying a comparison group used by Nicholaichuk et al. (2000). Nicholaichuk et al. (2000) selected post-hoc comparison cases from existing criminal history records. Older RCMP records, however, include a disproportionate number of recidivists given the routine purging of records due to death, official pardons, and extended periods of inactivity. Hanson and Nicholaichuk (2000) examined potential biasing effects by eliminating the cases in which bias was most likely (i.e., older records). They found that, in the 10 most recent years studied (i.e., 1987-1996), the difference in recidivism rates between the treated and comparison groups was still significant (13.1% and 24.3% respectively, $p < .01$), indicating that even the reduced treatment effect remained relatively strong.

Olver, Wong, and Nicholaichuk (2009) conducted an extension of Nicholaichuk et al.'s (2000) evaluation of the Clearwater Sexual Offender Treatment Program. Compared to the original study, the recent investigation included the addition of 176 treated sex offenders (*n* = 472 vs. *n* = 296) and 4 years of follow-up time. There were a number of significant differences between the treated and comparison samples: the treated sample was older both at age of index and time of release, had a greater amount of prior sexual convictions and repeat sexual offenders, and had a shorter mean follow-up period. As such, the authors conducted Cox regression survival analyses to control for age at release, sexual offending history, and length of follow-up. They observed a significant treatment effect after controlling for age at release and prior sexual convictions. They found significant group differences in recidivism (i.e., between treated and comparison samples), using chi-square and odds ratio (OR), at 4 follow-up points: 2 years (5.9% vs. 13.6%, OR = .40); 3 years (11.1% vs. 17.7%, OR = .58); 5 years (16.9% vs. 24.5%, OR = .63); 10 years (21.8% vs. 32.3%, OR= .59). The results remained significant upon controlling for age and offense history using logistic regression. These findings support the results of Nicholaichuk et al. (2000) and the conclusion that the Clearwater Sexual Offender Treatment Program can yield significant reductions in sexual recidivism.

Olver et al. (2009) noted the high-risk nature of their sample, which demonstrated sexual recidivism rates of 22% after 10 years with treatment and 32% without treatment. These rates were greater than those reported in the Hanson et al. (2002) meta-analysis (i.e., 12.3% among treated, and 16.8% among comparison, groups). However, the ORs were comparable between studies (Hanson et al. obtained an overall OR = .60, compared to OR = .40 to .63 in Olver et al.) indicating that the treatment effect sizes were similar. This suggests that the higher recidivism rates of the current study are likely due to the higher risk level of the sample and correspondingly higher base rate of sexual recidivism rather than the effectiveness of the treatment.

Marques, Wiederanders, Day, Nelson, and van Ommeren (2005) presented their final results of California's Sex Offender Treatment and Evaluation Project (SOTEP). They discussed that, while numerous outcome studies, reviews, and meta-analyses have found that current treatment approaches can significantly reduce recidivism among sexual offenders, others in the field note that important questions regarding treatment effects remain. The SOTEP was a longitudinal randomized clinical trial (RCT) that examined the effectiveness of cognitive-behavioral treatment with sexual offenders and compared the recidivism rates of treated and

untreated offenders. The project randomly assigned volunteers to either treatment or no-treatment conditions and produced three groups of participants matched on the variables of age, criminal history, and offender type. The three groups were designated: relapse prevention (RP; *n* = 259), volunteer control (VC; *n* = 225), and nonvolunteer control (NVC; *n* = 220).

The SOTEP's treatment program was operated at Atascadero State Hospital from 1985 to 1995. It provided intensive cognitive-behavioral treatment with a central focus on relapse prevention, administered primarily via group format, for a duration of two years. Following this, RP group members participated in a 1-year aftercare program. Of the 259 individuals randomly assigned to treatment, 55 withdrew their consent prior to being transferred to the hospital. Of the 204 that were admitted, 167 (82%) completed the program. The SOTEP administrators attempted to minimize the impact of attrition; for example, participants were retained in the RP group so long as they were not disruptive, regardless of the progress they made. Regarding the 37 dropouts, 14 left the program in under a year and 23 left the program in over a year. The treatment completers and dropouts did not significantly differ on key variables, except that dropouts were significantly younger. Outcome data was collected until 2001, at which point most participants had been at risk for a minimum of five years, with a maximum follow-up time of 14 years. The SOTEP measured both in-treatment changes, including pre-post tests, and long-term outcomes, namely sexual recidivism.

Results indicated that the sexual recidivism rates were not significantly different among the RP "treatment as assigned" or intent to treat group (*n* = 259; 22.0%), VC group (*n* = 225; 20.0%), and NVC group (*n* = 220; 19.1%). Subsequent results divided the RP "treatment as delivered" group (*n* = 204) into those who left before 1 year (*n* = 14) and those who left after 1 year (*n* = 190). Again, the recidivism rates did not significantly differ among the RP, VC, and NVC groups. However, the early treatment dropouts did demonstrate notably higher recidivism rates (35.7%); this result was likely not significant due to the small size of this group. There were no significant differences in recidivism rates according to offender type. A shortened version of the Static-99, termed the "Static-Lite," was utilized to assess risk; it demonstrated moderate predictive accuracy (AUC = .68). Controlling for static risk, there were again no significant differences in recidivism among the groups (RP: 21.6%, VC: 23.8%, NVC: 23%). The authors examined relationships between treatment progress and outcome. They found that pre- and post-treatment arousal to male children significantly predicted recidivism. Additionally,

they created an a priori 9-point scale (the "Got It" scale) to identify participants who benefited from the program. High risk offenders who "Got It" were found to recidivate significantly less (10.0%) than those who "Did Not Get It" (50.0%); differences were not significant within the low and medium risk groups.

Unlike the majority of sexual offender treatment outcome studies, the SOTEP did not find an overall treatment effect. Sexual offenders randomly assigned to treatment did not recidivate significantly less than those in the control groups, and this was the case for rapists and child molesters, and low risk and high risk offenders. The authors offered a number of comments regarding their null findings, beyond the conclusion that the treatment was ineffective. The experimental conditions differed in several ways, most notably that the RP group was hospital-based while the control groups were prison-based. Randomization does not guarantee equivalence, and the RP group was found to have significantly higher static risk scores than the control groups. The criminal history screening resulted in a relatively small group of high risk offenders; as such, the intervention may have been too intensive for a group of predominantly low and medium risk offenders. In an effort to manage attrition, RP participants were retained in the program regardless of level of motivation, engagement, or improvement. Regarding the study's design, it did not include a treatment readiness phase; it was more manualized than individualized; participants were a mix of offender types and risk levels; there was no incentive for participants to actively engage (discharge was unrelated to progress); and the aftercare component was possibly too intensive and lacking an interdisciplinary, individualized, case management approach. Importantly, the SOTEP was only consistent with one of the three RNR principles: it did not focus on high risk offenders, it targeted only some criminogenic needs, but it was based on cognitive-behavioral interventions. According to Andrews and Bonta (2003), adhering to more principles results in greater reductions in recidivism (26% reduction for adhering to all three, 18% for adhering to two, and 2% for adhering to one). One notable finding from the SOTEP study was that, within the group of high risk offenders, participants who were deemed to have benefited from treatment (i.e., "Got It") recidivated significantly less than those who did not. The authors noted that this supports the notion that assessments occurring during or after treatment increase the predictive accuracy of actuarial assessments alone. More broadly, it supports the assessment of dynamic factors that indicate treatment benefit and recidivism

reduction. Consistent with Rice and Harris (2003), Marques et al. (2005) encourage the use of randomized designs and offer suggestions for future tests of treatment.

Duwe and Goldman (2009) examined the effectiveness of a prison-based Minnesota Department of Corrections Sex Offender Treatment Program (SOTP). They used a retrospective quasi-experimental design, comparing 1,020 treated sex offenders to 1,020 matched untreated sex offenders. Participants were released between 1990 and 2003 with an average follow-up period of 9.3 years. The SOTP was long-term and intensive, used a cognitive-behavioral framework, followed the RNR model, and targeted moderate- to high-risk sex offenders. Results were presented in hazard ratios. They found that treatment participation lowered sexual recidivism by 27% (e.g., 14.2% for treated versus 19.5% for untreated), violent recidivism by 18%, and general recidivism by 12%. Treatment completion lowered recidivism as follows: sexual by 33%, violent by 23%, and general by 15%. Treatment dropout did not significantly increase recidivism. There were no significant differences in treatment effectiveness according to sex offender type. Duwe and Goldman concluded that the SOTP significantly, albeit modestly, reduced sex offender recidivism, particularly among those who completed it or successfully participated in it until release.

Olver, Nicholaichuk, Gu, and Wong (2012) examined treatment outcome in a sample of 732 Canadian Federally incarcerated sex offenders. Treated participants (n = 625) attended sex offender programs in CSC institutions across Canada, all of which were grounded in the principles of RNR. Participants were released between 1997 and 2000 and followed up for an average of 11.7 years. The authors developed a Brief Actuarial Risk Scale (BARS) to control for risk-related differences and found that it predicted sexual and violent recidivism. As described in the section on Risk Assessment with Sexual Offenders, there is substantial evidence in the literature supporting a relationship between age and recidivism, including sexual recidivism (i.e., decreased recidivism with increased age; e.g., Craig, 2011; Hanson, 2002; Harris & Hanson, 2004; Helmus et al., 2012; Thornton, 2006). As such, Olver et al. (2012) examined the potential moderating influences of risk and age on treatment outcome, namely sexual and violent (including sexual) reconviction. The recidivism base rates were 13.7% for sexual and 32.4% for violent.

Olver et al. (2012) found significantly lower rates of violent, but not sexual, recidivism among treated versus untreated offenders controlling for risk and follow-up time. Upon

stratifying the sample by risk level, they found significant treatment effects (i.e., higher and faster rates of recidivism among untreated versus treated offenders) only among moderate and high risk offenders, consistent with the risk principle. Controlling for risk, treatment completion was significantly associated with slower times to re-offense and less severe offenses. Regarding age and outcome, for sexual and violent recidivism, younger offenders had significantly higher recidivism rates than older offenders, and younger untreated offenders had significantly higher recidivism rates than younger treated offenders, but amongst older offenders there were no significant differences between treated and untreated groups. The authors remarked that these findings supported the dynamism of risk in that risk had decreased among treated higher risk offenders, as well as the potential for static measures to overestimate risk due to their inability to capture such treatment-related changes. They also supported the risk principle and the effectiveness of sex offender treatment, particularly among higher risk offenders. Finally, regarding the age and outcome findings, the authors suggested that the differences in outcome (i.e., the significant treatment effects among younger, but not older, offenders) were likely due to the older offenders comprising a lower risk group and the limited treatment effects observed among lower risk offenders.

1.5 Treatment Change among Sex Offenders

Motivation for behavior change is necessary in order for treatment to be effective, yet there has been no systematic investigation of this issue with sex offenders (Tierney & McCabe, 2001). The Stages of Change Model (Prochaska, DiClemente, & Norcross, 1992) or Transtheoretical Model of Change (TTM) has recently been applied and validated as a measure of treatment change among sex offenders as part of the VRS-SO (Olver et al., 2007). Although the TTM was not developed as a measure of motivation specifically, each stage reflects an individual's level of motivation to change a specific problem behavior (Tierney & McCabe, 2001). There are five sequential stages: in the Precontemplation stage, individuals have no awareness of their problems and demonstrate no intention to change; in the Contemplation stage, individuals are aware of their problems and are seriously thinking about changing, but behavioral change is not yet evident; in the Preparation stage, behavioral improvements are evident, but changes are inconsistent over time and situations and lapses are frequent; in the Action stage, overt behavioral changes are observed and have been consistent over an extended period of time, but have not been demonstrated in a variety of high risk situations; and in the Maintenance stage,

individuals consolidate gains made previously and employ strategies to prevent relapse with changes being stable over time and generalized to a variety of high risk situations (Wong, Olver, Nicholaichuk, & Gordon, 2003).

The TTM demonstrates the potential utility to investigate motivation for behavior change with sex offenders. Each progressive stage is characterized by increasing motivation or readiness to change. Indeed, research has identified a relationship between particular stages and treatment/change behavior: individuals in the Precontemplation and Contemplation stages are more likely than those in the Action and Maintenance stages to terminate treatment prematurely; and the higher the pre-treatment Stage of Change, the greater the likelihood of behavior change. Further, it is plausible that the post-treatment Stage of Change may demonstrate a relationship to recidivism (Tierney & McCabe, 2001). The TTM is one operationalization of the change process which may enable the examination of the relationships between motivation and treatment dropout, behavior change, and recidivism.

Sex offenders have been viewed as being unmotivated to change their sexual offending behavior (Tierney & McCabe, 2002). While the area of motivation for change in sex offenders lacks systematic investigation, Tierney and McCabe (2002) have identified several variables possibly linked to motivation among sex offenders. In this framework, cognitive distortions are conceptualized to reflect motivation for treatment and behavior change, with denial reflecting a low level of motivation and full admission reflecting a high level. Behavioral variables suggested to be associated with motivation among sex offenders include treatment willingness or participation, treatment behavior, treatment completion, use of relapse prevention strategies, and recidivism. Further, acceptance of problems, attendance, promptness, and level of participation were found to be more predictive of treatment effectiveness (mastery of the principles and concepts of cognitive behavioral therapies and aversive conditioning procedures) than changes in sexual arousal patterns. All of these proposed relationships require further empirical validation (Tierney & McCabe, 2002).

Individual outcome studies continue to present somewhat mixed results regarding the effectiveness of treatment in reducing recidivism among sexual offenders. Overall, however, treatment appears to be beneficial, especially when it adheres to the RNR principles, as demonstrated by meta-analyses and numerous individual studies indicating reduced recidivism among treated sexual offenders. Outcome studies comparing the recidivism rates of treated

versus untreated sexual offenders provide one manner in which to broadly gauge treatment effectiveness. They do not, however, inform regarding how treatment effects changes and reduced recidivism. To understand this, it is necessary to examine within-treatment outcome, or treatment-related changes, and then link these changes to reductions in risk and ultimately reductions in recidivism. One manner in which to do this is to examine pre- to post-treatment changes on measures of functioning postulated to underpin risk for sexual recidivism.

1.5.1 Examinations of within treatment change from sex offender programs on psychological variables targeted for treatment

As part of the Sex Offender Treatment and Evaluation Project (SOTEP), Marques et al. (2005) examined pre-post comparisons on in-treatment measures among their treated, or relapse prevention (RP), group. They found that cognitive distortions and phallometric arousal to female and male children were significantly lower from pre- to post-treatment. Williams, Wakeling, and Webster (2007) explored treatment change among a sample of 211 sexual offenders who had participated in the Adapted Sex Offender Treatment Program (ASOTP; adapted for offenders with cognitive and social functioning deficits) in England and Wales between 1997 and 2003. Participants completed six psychometric assessment measures pre-treatment and six weeks post-treatment. Significant changes were found on five of the six measures, as follows: denial and minimization (d = 0.70, medium to large effect), attitudes about victims of sexual offenses (d = 0.61, medium effect), victim empathy (d = 0.81, large effect), relapse prevention (d = 1.34, very large effect), and self-esteem (d = 0.42, small effect). While both of these studies demonstrated positive treatment results, neither Marques et al. (2005) nor Wiliams et al. (2007) examined the relationship between treatment change and recidivism.

Nunes and Cortoni (2007) also sought to gauge the effectiveness of treatment for sexual offenders and examined change on various treatment targets, as assessed by dynamic risk measures, from pre- to post-treatment. In their study of 313 sex offenders who had completed the National Sex Offender Program (NaSOP), Nunes and Coronti (2007) observed small to medium sized improvements on two dynamic risk assessment instruments: the STABLE 2000 and the VRS-SO. Specifically, small improvements were observed on the Criminality factor of the VRS:SO and medium improvements were observed on the STABLE 2000 as well as the Sexual Deviance and Treatment Responsivity factors of the VRS-SO. These improvements suggested that the NaSOP successfully targeted dynamic risk factors for sexual recidivism.

Similarly, as part of a pilot evaluation of the New Zealand Adult Sex Offender Treatment Program (ASOPT), Wilson (2008) examined change in responsivity using the Treatment Readiness, Responsivity and Gain Scale: Screening Version (TRRG:SV) and change in dynamic sexual risk using the VRS-SO. Over the course of the program, Wilson (2008) observed increased readiness to change and a reduction in responsivity barriers among participants, with mean change scores on the TRRG:SV as follows: Treatment Readiness $M = 3.1$ and Treatment Responsivity $M = 3.0$. Further, all participants reduced their dynamic risk scores with a mean score reduction of 5.5 on the VRS-SO, which equated to an average reduction in risk of sexual reoffending of 17%. These findings provided support for two key tenets: risk is dynamic and changeable through treatment and it is possible to measure change with tools such as the VRS-SO and the TRRG:SV.

Nunes, Babchishin, and Cortoni (2011) assessed pre- to post-treatment change at both group and individual levels, using group-level significance testing and effect size estimates, and individual-level clinical significance testing. Clinical significance testing identifies whether a participant is in the range identified as functional or normal at post-treatment and whether the amount of change observed is greater than would be expected by chance. As with previously described studies, they did not assess the relationship between treatment change and recidivism. Participants were 313 adult male sex offenders who successfully completed the low- or moderate-intensity National Sex Offender Program (NaSOP) in Canada between 2000 and 2004. The majority of participants ($n = 296$) completed the program in federal penitentiaries. The average Static-99 score was 2.88 (medium-low risk). Measures assessed cognitive distortions, intimacy, loneliness, and risk (STABLE 2000 to assess dynamic risk). At the group level, participants improved on all measures except intimacy, with most effect sizes in the medium range (e.g., STABLE 2000 pre-treatment mean = 5.57, post-treatment mean = 4.49, effect size = -0.49, $p < .05$). Static risk was not found to be a significant moderator of treatment change. At the individual level, treatment gains were more modest, with approximately one third of participants being considered "recovered" or having reached functional levels at post-treatment. As the study did not link change to sexual recidivism, the authors recommend this as an important next step.

Beggs (2010) provided an overview discussion of within-treatment outcome, or the amount of change achieved as a result of treatment, among sexual offenders. She contended that

such information has important clinical and research applications. Information on treatment-related gains can be an important consideration for post-treatment risk assessments and decisions relating to release and supervision. It may help to clarify the efficacy of sexual offender treatment programs; instead of comparing the recidivism rates of treated versus untreated samples, it may be more appropriate to compare those who made treatment-related gains to those who did not. Identifying and targeting components associated with recidivism could result in improved recidivism rates among treated offenders, as well as clarify whether (or support that) dynamic risk factors are changeable and whether (or that) changes are linked to reduced recidivism. Within-treatment outcome information could elucidate the relationship between specific responsivity issues and treatment-related gain. Beggs (2010) highlighted the necessity for outcome measures to be associated with recidivism, as recidivism reduction remains the ultimate treatment outcome.

Beggs (2010) reviewed conceptualizations of within-treatment outcome among sexual offenders and their respective validity, with a focus on the relationship with recidivism. She provided a comprehensive list and review of studies involving the assessment of change achieved during treatment among adult sexual offenders. This review identified 22 studies, classified into 3 categories based on the method of assessing within-treatment outcome: 1) change on dynamic risk, 2) risk assessment tools incorporating within-treatment outcome, and 3) systematic clinical ratings of overall within-treatment outcome. The VRS-SO is cited in the second category. While not referenced in the article, the TRRG:SV provides an example of the third category. The overall results on the relationship between within-treatment outcome and recidivism are described as variable and recommendations are to compare the validity of existing approaches to assessing within-treatment outcome, improve the measurement of it, and explore its relationship with recidivism.

It seems apparent that, once dynamic factors related to recidivism have been identified, and treatment-related change has been found to occur on these factors, the ultimate question becomes whether this change has any relationship to recidivism. In accordance with this, Beggs and Grace (2011) articulated that one way to assess treatment effectiveness is to examine the relationship between treatment-related change and recidivism. She further remarked that having multiple measures of change from different sources demonstrating concurrent and predictive validity would provide stronger evidence for this relationship. Beggs and Grace (2011)

examined whether three different methods for assessing treatment-related change would show convergent validity; whether treatment gain would predict reductions in recidivism; and whether change would incrementally predict recidivism beyond static and dynamic risk factors. The three different methods included 1) pre- to post-treatment change on a battery of self-report psychometric tests; 2) pre- to post-treatment change on the VRS-SO Dynamic scale; and 3) a modified version of the Standard Goal Attainment Scaling (SGAS; Hogue, 1994), rated post-treatment.

Participants were adult male sexual offenders with children victims (n = 218) who completed a prison-based cognitive-behavioral treatment program, the Kia Marama Program in New Zealand, between 1993 and 2000. The average Static-99 score was in the moderate-low range. The average age of the sample was 41.1 years. The rate of noncompletion was 4.8%. The average length of follow-up was 12.24 years. Reconviction rates were as follows: 13.3% sexual, 13.8% violent, and 37.2% general. Results indicated that all of the measures of treatment gain were convergent and significantly predicted reductions in sexual recidivism. They all remained predictive after controlling for static risk factors. After controlling for static and dynamic risk factors, change on the psychometric battery incrementally predicted recidivism, change on the VRS-SO approached significance, and the SGAS was no longer significant. These results provided support for a relationship between treatment gain and reduced recidivism. Recommendations were to replicate this relationship with additional independent samples and develop a system to assess treatment change based on psychometric data that is easy to use and can be combined with measures of risk.

Results regarding change on the VRS-SO were of particular interest given the purpose of the current study and the focus on the VRS-SO. Beggs and Grace (2011) found the average change on the VRS-SO Dynamic scale was 4.53 (SD = 1.89). Regarding the factors, the largest change was on Sexual Deviance (2.25, SD = 1.07), followed by Treatment Responsivity (1.11, SD = 0.61), and Criminality (0.26, SD = 0.38). Change on the Dynamic scale was negatively correlated with recidivism (r = -.23, p < .001), as was change on the Sexual Deviance and Treatment Responsivity factors (r = -.25, p <.001 and r = -.14, p = .04, respectively), but change on the Criminality factor was not.

Olver and Wong (2011a) articulated that there remains a dearth of direct empirical evidence linking dynamic risk reduction and recidivism reduction. Building on previous

findings (Olver et al., 2007), they examined sexual recidivism rates according to level of risk and therapeutic change. The sample included 321 male, federally incarcerated, treated sex offenders followed up for an average of 10 years. The authors assessed risk with the Static-99 and treatment change with the VRS-SO Dynamic. They identified four risk-change groups: low risk-low change, low risk-high change, high risk-low change, and high risk-high change. In this manner, they investigated the validity of the Risk Principle, which stipulates that, all else being equal, higher-risk offenders should demonstrate greater treatment-related risk reductions compared to lower-risk offenders whose potential for reduction is limited by the "floor effect" or their already low scores. Olver and Wong (2011a) also identified four change groups: low change, moderate-low change, moderate-high change, and high change. They compared the predictive accuracy of static and dynamic risk assessment approaches according to amount of treatment change.

While both high risk groups had higher pre-treatment dynamic risk scores than both low risk groups (as expected), the post-treatment scores for the high risk-high change group were not significantly higher than for one of the low risk groups. That is, the average post-treatment dynamic risk score of the high risk-high change group (M = 22.4) was statistically more similar to the low risk-high change group (M = 20.1) than the high risk-low change group (M = 25.5). Further, the high risk-low change group had significantly higher rates of sexual recidivism than the other three groups, including the high risk-high change group. Survival analyses indicated that the failure (or recidivism) rates were not significantly different between high risk-high change offenders and low risk offenders in general.

Regarding the predictive accuracy of static and dynamic measures, the Static-99 consistently predicted sexual recidivism in the low and moderate- low change groups, but not the moderate-high and high change groups. As therapeutic change increased, the predictive accuracy of the Static-99 decreased. The VRS-SO Dynamic variables (pre- and post-treatment) significantly predicted sexual recidivism for three of the change groups. The results for the high change group likely did not attain significance due to power restrictions. The predictive accuracy of the VRS-SO Dynamic variables also declined between the low change and high change groups, although to a lesser degree than the Static-99.

Overall, the results supported the risk principle and providing treatment to higher risk offenders. They also provided support for the dynamic nature of risk. The static risk scores of

the two high risk groups were indistinguishable, yet the recidivism rates varied substantially according to amount of therapeutic change, indicating that the risk of the high change group had been moderated. The VRS-SO Dynamic variables, which are capable of capturing these treatment-related changes in risk, had higher predictive validity magnitudes than the Static-99 for sexual recidivism among offenders who made higher amounts of treatment-related change. The authors suggested that in post-treatment risk assessments, static and dynamic measures can be used in concert, reconciling any discrepancies with professional discretion, including evaluating the reliability of the measure and the credibility of the change.

Olver, Nicholaichuk, Kingston, and Wong (2013) prospectively examined the relationship between treatment change, as captured by the VRS-SO, and recidivism. They obtained VRS-SO data on 676 adult male sexual offenders who participated in a sexual offender treatment program between 2000 and 2008 while incarcerated in a CSC federal institution. The institutions ranged across the five geographic regions of Canada, with the majority (67.2%) of participants having attended treatment in the Prairie Region. The programs included the National Sex Offender Program (NaSOP; offered in Low, Moderate, and High Intensity), the Clearwater Sex Offender Program (High Intensity), and the Riverbend Low Intensity Sex Offender Program. The VRS-SO was routinely scored by treatment providers as part of these programs, as was the Static-99, which the authors converted into Static-99R scores. The participants were followed-up for an average of 6.31 years post-release. The recidivism rates were as follows: 6.2% sexual charge or reconviction, 14.5% violent reconviction, and 33.7% any reconviction.

Olver et al. (2013) found that the Static-99R and VRS-SO dynamic total scores (pre- and post-treatment) significantly predicted all outcomes, that is sexual, violent, and general recidivism, to a comparable degree (AUC = .65 to .78). The VRS-SO Criminality factor (pre- and post-treatment) also significantly predicted all outcomes, as did the Treatment Responsivity factor to a lesser degree, although the Sexual Deviance factor did not significantly predict any outcomes. The VRS-SO post-treatment measures slightly outperformed the pre-treatment measures. Both the Static-99R and VRS-SO dynamic total scores (pre- and post-treatment) significantly and uniquely predicted outcome. Regarding pre- to post-treatment change, significant differences (p <.001) were observed for the VRS-SO dynamic total and all three factors, with the dynamic total and Treatment Responsivity factor demonstrating the most

substantial changes. Overall, higher risk offenders had significantly higher change scores than lower risk offenders, particularly on the dynamic total and Criminality factor.

Regarding the relationship between change and recidivism, Olver et al. (2013) found that the zero order correlations were in the expected direction (i.e., more change equated to less recidivism), but were generally non-significant. They calculated semi-partial correlations to control for pre-treatment scores (given the influence of pre-treatment scores on change scores) and found that change scores significantly predicted outcome, most consistently the dynamic total and Criminality factor which significantly predicted all outcomes. Finally, the authors examined the relationship between change and recidivism controlling for static and dynamic risk. They found that change was associated with reduced recidivism to varying degrees. Specifically, dynamic total change significantly predicted general recidivism and trended towards significance for violent recidivism; Sexual Deviance change significantly predicted violent and general recidivism; Criminality change significantly predicted sexual recidivism; and Treatment Responsivity change significantly predicted general recidivism. When all entered simultaneously, however, only the Sexual Deviance change score predicted outcome, specifically violent recidivism.

Wakeling, Beech, and Freemantle (2013) examined the relationship between treatment change and recidivism in a sample of 3773 sex offenders who had completed a prison-based cognitive-behavioral Sex Offender Treatment Program (SOTP) in England and Wales between 1996 and 2006. Psychometric measures were administered pre- and post-treatment and sexual recidivism risk was calculated using a modified version of the Risk Matrix 2000 (RM 2000). The authors organized their measures according to Thornton's (2002) Structured Assessment of Risk and Need (SARN, formerly SRA), thereby also revalidating the utility and predictive validity of the domains. The outcome comprised sexual and violent recidivism given the low base rates of sexual recidivism, and the average length of follow-up was 1522 days (just over 4 years). The psychometric scores obtained small effect sizes in predicting sexual and violent reconviction. Some of the psychometric measures were significantly associated with recidivism (predominantly those that fell in the Socioaffective domain), with the lowest recidivism rates observed in the *already okay* groups and the highest in the *improved* groups. The authors suggest this may have been due to over-treating lower risk/need offenders and under-treating higher risk/need ones. Four of the SARN domains were significantly associated with recidivism:

Sexual Interests, Socioaffective Functioning, and Self-Management/Self-Regulation with the *Change not required* groups demonstrating significantly less recidivism than the *Change still required* groups. Finally, offenders deemed to be *Changed* exhibited significantly lower rates of recidivism than those deemed to be *Not Changed* (4.8% vs. 8.1%, respectively), although overall treatment change status did not incrementally contribute to the predictive validity of the RM2000. The authors concluded that the results provided only limited support for the utility of psychometric measures in assessing risk and predicting outcome. They did, however, support clustering individual measures into overarching domains (i.e., the SARN) and inform the allocation of resources (i.e., to high risk/need offenders) and selection of appropriate measures.

Olver, Nicholaichuk, and Wong (2013) sought to further advance the research on core dynamic risk-need domains underpinning sexual offender risk. They examined risk and treatment change among 267 treated adult male sexual offenders using a battery of psychometric assessment measures. Participants attended the Clearwater Sex Offender Program between 1983 and 1997 and were followed up an average of 18 years post-release. Participants completed the battery of psychometric measures pre- and post-treatment, with an average of 5.8 months in between. The battery consisted of measures deemed most appropriate at the time in terms of sexual offender treatment and recidivism. Risk was assessed using the Static-99 and VRS-SO. Sexual and violent (including sexual) recidivism (i.e., re-conviction) were examined. Several significant pre- to post-treatment changes of moderate magnitude (i.e., $d > .50$) were observed across the psychometric measures, indicating improved and even healthy functioning. Social desirability also increased, however, and was associated with less pathological scores and increased change. An exploratory factor analysis (EFA) suggested three factors, or need domains, that were labeled Socioemotional Functioning, Anger/Hostility, and Misogynist Attitudes. The authors note dthat these factors are consistent with Thornton's (2002) Structured Risk Assessment (SRA) framework, Allan et al.'s (2007) EFA results, and the meta-analytic literature (Hanson & Morton-Bourgon, 2005).

Olver, Nicholaichuk, and Wong (2013) examined the convergent and predictive validity of the need domains. Results indicated that the Socioemotional Functioning domain correlated significantly with the VRS-SO Sexual Deviance factor and the Anger/Hostility and Misogynist Attitudes domains correlated significantly with the VRS-SO Criminality and Treatment Responsivity factors, with the most consistent results observed post-treatment. These convergent

validity results were small to moderate in magnitude, indicating some shared variance between the need domains and the VRS-SO factors. Regarding predictive accuracy, 27.3% of participants were convicted for a new sexual offense and 50.6% percent were convicted for a new violent (including sexual) offense. The three need domains were combined to create a Need Total. Among the domains, significant predictors of sexual recidivism included the Socioemotional Functioning domain and Need Total post-treatment. Significant predictors of violent recidivism included the Anger/Hostility domain pre- and post-treatment, the Misogynist Attitudes domain pre-treatment, and the Need Total post-treatment. Controlling for risk and social desirability, the Need Total pre-treatment did not significantly predict sexual recidivism, but trended toward significantly predicting violent recidivism, while the Need Total post-treatment significantly predicted both sexual and violent recidivism.

Olver, Nicholaichuk, and Wong (2013) also examined the relationship between pre- to post-treatment change scores and recidivism. They noted (along with Beggs and Grace, 2011) that change scores are impacted by pre-treatment scores, with higher (i.e., more pathological) pre-treatment scores having more room to change and thus generally generating larger change scores. Indeed, they found that the pre-treatment and change scores were significantly correlated (r = .51 to .71). They also found weak and non-significant relationships between the raw change scores and outcome, but improved relationships using standardized residual change scores (i.e., controlling for pre-treatment scores). Additionally controlling for risk, changes in the Need Total significantly predicted reductions in sexual and violent recidivism, changes in the Anger/Hostility domain significantly predicted reductions in violent recidivism, and changes in Socioemotional Functioning trended toward significantly predicting reductions in sexual recidivism. The authors concluded that, while the results provide some support for the validity of the psychometric constructs, psychometric measures may best be used in conjunction with dynamic risk assessment tools to assess treatment change and inform recidivism risk.

1.6 Treatment Attrition among Sex Offenders

Intervention efficacy is limited by treatment attrition or dropout. In their review of the literature on sex offender treatment, Wormith and Olver (2002) reported dropout rates ranging from 19% to 37.5%. This is particularly concerning seeing that treatment attrition has been found to be a robust and significant predictor of sexual offense recidivism (e.g., Hanson & Harris, 2000). It has been demonstrated that noncompletion and recidivism can be predicted

using some the same client characteristics or risk factors. For instance, Browne, Foreman, and Middleton (1998) examined 96 child molesters who attended a cognitive-behavioral group treatment program, 37% of which dropped out. Significant predictors of dropout included: violent index offense, violent and noncontact offenses, previous police involvement and incarceration, unemployment, alcohol/drug dependency, and deterioration and delinquent behavior during treatment. Wormith and Olver (2002) examined treatment dropout among violent offenders. More than one third of the sample failed to complete the program. Noncompleters were more likely than completers to be higher risk offenders, classified to maximum security, of Aboriginal ancestry, to have had less formal education and employment, and to have scored more poorly on treatment process variables. An important implication of these findings is that higher risk offenders with greater criminogenic needs (i.e., those most in need of treatment) are also the ones least likely to complete and thus benefit from intervention.

Seager, Jellicoe, and Dhaliwal (2004) examined treatment attrition among 146 adult male sex offenders involved in a sex offender treatment program that was delivered in a medium-security Canadian federal penitentiary between 1995 and 1999. Of the 146 participants, 109 (75%) were treatment completers and 37 (25%) were noncompleters. Treatment noncompleters consisted of those who dropped out, refused, and were terminated. Participants were followed up for two years after release. Noncompleters sexually and violently recidivated at 6 times the rate of completers. That is, 5% of completers, compared to 32% of noncompleters, were reconvicted for a sexual/violent offense. This difference was statistically significant ($p < .001$). Participants were categorized as low or high risk based on their Static-99 score. Among completers, low and high risk offenders had similarly low rates of recidivism (4% and 5% respectively). Among noncompleters, 27% of low risk, and 35% of high risk, offenders recidivated. These results clearly supported the notion that failure to complete treatment is related to significantly higher risk for sexual and/or violent re-offending. Further, given that low-risk noncompleters were five times more likely to recidivate than high-risk completers, the authors stated that when treatment status is known, "pretreatment risk estimates become irrelevant" (p. 609).

As part of the Sex Offender Treatment and Evaluation Project (SOTEP; described previously), Marques et al. (2005) examined treatment attrition in their sample of 204 offenders admitted to the treatment program. They compared the 167 (82%) treatment completes to the 37

(18%) dropouts and found no significant differences between groups in terms of static risk, treatment need (e.g., cognitive distortions, sexual deviance), or demographic variables other than age. They did find that dropouts were significantly younger than completers and rapists were more likely to dropout than child molesters. Of all the treatment and comparison groups, early dropouts (<1 year) demonstrated the highest rates of sexual and violent recidivism (35.7% and 28.6% respectively) although the differences were not significant due to the small sample size.

In their study of sex offender treatment attrition, Beyko and Wong (2005) examined 64 participants (32 dropouts and 32 completers) who attended the Clearwater Sex Offender Program (described previously) between 1995 and 2001. They classified potential attrition predictors under the domains of risk, need, and responsivity (RNR). They found that two sets of variables predicted attrition: 1) general criminality and rule-breaking behaviors (criminogenic needs), captured by the Criminality domain of the VRS-SO, disruptive and unruly behavior in the program, and number of non-violent institutional offenses; and 2) lack of motivation and insight (responsivity), captured by negative attitudes toward treatment, denial of offense, and the Treatment Responsivity domain of the VRS-SO. Rapists were found to be more aggressive than other types of sex offenders (pedophiles, incest offenders, and mixed offenders) and were more likely to drop out of treatment. Variables that did not predict attrition are as follows: risk level (measured by the Static-99), intellectual functioning, and demographics (race, education, employment history, and marital status). Beyko and Wong (2005) articulated that the RNR principles provide useful guidelines for the study of treatment attrition, the results of which should be seen as markers for program improvement. They suggested that predictors of attrition can be used to inform possible improvements to a program, while non-predictors potentially reflect strengths of the program. Predictors of attrition, they noted, are specific to the individual program and sample under study and the interaction therein, thus a certain lack of consistency in terms of findings amongst studies in this area is to be expected.

While it has been found that dropout impedes the risk reducing effects of treatment (Nunes & Cortoni, 2008), it remains somewhat more ambiguous regarding which factors are predictive of dropout. Nunes and Cortoni (2008) noted that, according to the literature, it appears that not all dimensions of risk for sexual recidivism are indicative of risk of dropout. In their study, Nunes and Cortoni (2008) examined the relationship between dropout and two dimensions involved in sexual recidivism risk: sexual deviance and antisocial orientation (e.g.,

Doren, 2004; Hanson & Morton-Bourgon, 2004, 2005). Participants comprised a sample of non-Aboriginal male sex offenders (52 dropouts and 48 completers) who attended low-, moderate-, or high-intensity sex offender programming in a Canadian federal institution between 1994 and 2002. Nunes and Cortoni (2008) observed that, as expected, the general criminality items of the Static-99 were significantly associated with dropout, but the sexual deviance items were not. These findings are consistent with Beyko and Wong (2005) who found that the VRS-SO Criminality domain, but not the Sexual Deviance domain, predicted dropout. The findings also suggest that risk for sexual recidivism is not synonymous with risk for dropout from sex-offender programs, thus highlighting the importance of being specific in conceptualizing risk.

In their review of the relevant literature, Olver and Wong (2011b) reported sex offender treatment attrition rates ranging from 26% to 77% (which are higher than the rates reported by Wormith and Olver, 2002). They reported the following predictors of attrition: mental health concerns, sexual and nonsexual violent offending history, disruptive treatment behavior, denial of sex offenses, unemployment, substance abuse, and higher risk as measured by actuarial sex offender risk measures. Olver and Wong (2011b) commented that it is thus the highest risk and need offenders who are most likely to drop out of treatment, which possess significant concerns for public safety. They noted that the relationship between dropout and increased risk for recidivism is unsurprising given that the two outcomes share many common predictors. They agreed with others (e.g., Beyko & Wong, 2005) that these predictors should be used to target individuals who may benefit from additional provisions in order to remain in treatment.

Olver and Wong (2011b) examined predictors of treatment dropout in a sample of 154 male federally-incarcerated sex offenders who attended the Clearwater Sex Offender Program between 1983 and 1997. They found that 15% of participants dropped out of the program, which included premature withdrawals and discharges. Reasons for dropout included: poor motivation or effort, disruptive behavior, personally requested or reason not specified, and administrative/other (e.g., early release). Significant predictors of dropout included: single/never married; employment instability; fewer years of education ($p < .06$); and diagnoses of any personality disorder, antisocial personality disorder, or psychopathy. Compared to completers, dropouts spent significantly less time in treatment; made significantly less change as measured by the VRS-SO; and had significantly higher risk scores on the VRS-SO dynamic total and Criminality and Treatment Responsivity factors, but not the Static-99, VRS-SO static total, or

Sexual Deviance factor. These findings were similar to Beyko and Wong (2005) who also examined Clearwater Program participants and found that the VRS-SO Criminality and Treatment Responsivity factors, but not the Sexual Deviance factor or Static-99, were significantly related to dropout. Olver and Wong (2011b) found that the following variables were unrelated to dropout: criminal history, sentence length, age, native ancestry, substance use disorder, mental illness, paraphilia, or sex offender type. They posited that appropriately addressing criminogenic and responsivity needs, especially those related to dropout, may facilitate the retention of offenders in treatment programs, particularly those high risk/high need offenders most in need of treatment.

Olver, Stockdale, and Wong (2011) conducted a meta-analysis of predictors of offender treatment attrition and its relationship to recidivism, including a separate examination of sex offender program attrition. They found that the overall attrition rate from sex offender programs was 27.6% and 29.4% including preprogram attrition (k = 34). Inpatient and community sex offender programs demonstrated comparable rates of attrition (30.4% and 26.4% respectively). Significant predictors were found in the domains of demographic factors, general criminality, sexual deviance, psychological concerns, and treatment responsivity indicators. Some of the strongest predictors (i.e., with the greatest r_w values) included: unemployment (r_w = .13), education level (r_w = -.11), antisocial personality disorder (r_w = .09), psychopathy score (r_w = .15), criminal history and index offense variables (r_w = .11 to .14), antisocial orientation (r_w = .25), unrelated victim (r_w = .15), sexual deviance measure (r_w = .08), Static-99 (r_w = .08), personality disorder (r_w = .21), and numerous treatment-related factors (e.g., denial, negative treatment attitude, low motivation; r_w = .14 to -.23). Sex offender program attrition was significantly associated with sexual (r_w = .15), nonsexual violent (r_w = .12), general violent (r_w = .22), and any (r_w = .21) recidivism. These findings bolster the notion that, compared to treatment completers, noncompleters are more likely to be high-risk, high-need offenders with notable responsivity issues. Olver et al. (2011) suggested that, while undoubtedly challenging, attending to attrition predictors and responsivity issues and retaining this particular group of offenders in treatment has the potential to result in important reductions in recidivism.

While the assessment and prediction of recidivism risk is of significant importance in the management of offenders, of equal, if not more, importance is the provision of appropriate and effective treatment and the necessity to maximize and evaluate treatment-related change and

minimize treatment attrition. From their study of 4,724 sexual offenders, Harris and Hanson (2004) discovered that within the first five years of release, 14% of the sample had reoffended sexually. After twenty years, this number increased to 27%, equaling 1,275 new incidents of sexual victimization. Had these offenders received appropriate treatment and demonstrated meaningful reductions in recidivism risk from therapeutic change and improvement, perhaps the number of new victims could have been further reduced. This research study has wide-ranging knowledge translation capabilities. The results will inform on the future designing, delivery, and efficacy of risk reduction treatment programs for sexual offenders. It will tailor the allocation of resources in a more cost effective manner by assisting in the determination of who to treat, what to treat, and how to treat it. The potential effects for society are substantial as reductions in risk can mean reductions in crime.

1.7 Purpose of the Present Study

The literature reflects a paucity of information regarding the interrelationship between risk of reoffending, treatment readiness, treatment attrition, change subsequent to programming, and recidivism among sexual offenders (Douglas & Skeem, 2005). The present program of research was divided into three sections. The first section examined the ability of three risk assessment measures (the Static-99, STABLE 2007, and VRS-SO) to predict sexual, violent, and general recidivism among federally incarcerated sexual offenders. An additional component to the first section was to cross-validate the findings of the original TRRG:SV validation study and to expand them, for instance, by examining the relationship between the Treatment Gain domain and recidivism. The second section examined relationships among the measures of change (VRS-SO and TRRG:SV) and outcome as well as to examine the utility of the STABLE 2007 in assessing change. This included examining the ability of these tools to measure change and the association of treatment-related change to recidivism. The third and final section examined relationships among treatment attrition and a number of key variables, including risk, treatment readiness and responsivity, and recidivism.

1.8 Hypotheses

Given previous empirical evidence regarding the relationships among risk of reoffending, treatment readiness, treatment attrition, change subsequent to programming, and recidivism, the following hypotheses were proposed for the present program of research.

1.8.1 Section 1: Validity of the risk assessment measures.

1.8.1.1 Convergent validity.

1. 1) The Static-99 and Static-99R total scores will be significantly positively correlated with the VRS-SO Static scale total score.
1. 2) The STABLE 2007 total score will be significantly positively correlated with the VRS-SO Dynamic scale total score.
1. 3) The Static-99, Static-99R, STABLE 2007, and VRS-SO total scores will be significantly positively correlated.

1.8.1.2 Predictive validity.

1. 4) The Static-99, Static-99R, STABLE 2007, and VRS-SO total scores will significantly predict sexual recidivism (i.e., higher total scores will be positively associated with higher sexual recidivism).
1. 5) The VRS-SO Static scale and Dynamic scale total scores will each significantly predict sexual recidivism.
1. 6) The VRS-SO Dynamic scale total score will demonstrate significant incremental predictive validity over the VRS-SO Static scale total score and the Static-99R total score.
1. 7) The TRRG:SV Treatment Gain scale total score will be significantly inversely associated with sexual recidivism (i.e., higher treatment gain will correspond to lower sexual recidivism).

1.8.2. Section 2: Validity of the change measures.

1.8.2.1. Convergent validity.

2. 1) Change on the STABLE 2007 will be significantly positively correlated with change on the VRS-SO.
2. 2) The TRRG:SV Treatment Readiness scale total score will be significantly positively correlated with the TRRG:SV Treatment Responsivity scale and Treatment Gain scale total scores.
2. 3) The TRRG:SV Treatment Responsivity scale total score will be significantly positively correlated with the TRRG:SV Treatment Gain scale total score.
2. 4) The TRRG:SV Treatment Gain scale total score will be positively correlated with change on the VRS-SO.
2. 5) Change on the TRRG:SV Treatment Readiness and Treatment Responsivity scales (pre-

treatment minus post-treatment scores) will be significantly positively correlated with the TRRG:SV Treatment Gain scale total score and change on the VRS-SO.

1.8.2.2 Predictive validity.

2. 6) Change on the VRS-SO and the STABLE 2007 will be significantly inversely associated with sexual recidivism (i.e., higher change will correspond to lower sexual recidivism).

1.8.3. Section 3: Treatment attrition.

3. 1) The TRRG:SV Treatment Readiness scale total score will be significantly inversely associated with treatment attrition (i.e., higher treatment readiness will correspond to lower treatment attrition).
3. 2) The TRRG:SV Treatment Responsivity scale total score will be significantly inversely associated with treatment attrition (e.g., higher treatment responsivity will correspond to lower treatment attrition).
3. 3) Risk will be significantly positively associated with treatment attrition (e.g., higher risk will correspond to higher treatment attrition).
3. 4) Risk will be significantly inversely associated with length of time in treatment (e.g., higher risk will correspond to shorter time in treatment).
3. 5) Treatment attrition will be significantly positively associated with recidivism.
3. 6) Cognitive distortions as measured by the VRS-SO item will be significantly positively associated with treatment attrition (e.g., higher cognitive distortions will correspond to higher treatment attrition).
3. 7) Denial as measured by the TRRG:SV item will be significantly positively associated with treatment attrition (e.g., higher denial will correspond to higher treatment attrition).

Chapter 2. Method

2.1 Participants

Participants included 185 federally incarcerated adult male sex offenders who had been convicted of a sexual offense and had participated in, though not necessarily completed, the Clearwater Sex Offender Treatment Program at the Regional Psychiatric Centre (RPC) in Saskatoon, Saskatchewan between 1998 and 2001. This sample included all consecutive Clearwater admissions during this time frame, most of whom were later released to the community either on warrant expiry or some form of conditional release. Individuals who had not been released at the time of data collection (e.g., individuals designated Dangerous Offenders or serving life sentences and not yet released) and hence had no follow-up, were excluded. Key participant characteristics are reported in Table 2.1. The mean age of the sample upon admission to the Clearwater Sex Offender Treatment Program was 36 years (*SD* = 10.2) and the mean age upon release into the community was 39 years (*SD* = 10.4). Approximately 49% of the offenders were Aboriginal, 43% were Caucasian, and 8% were of "other" ethnic descent (e.g., Inuit, Arabic, South American, and Romanian). Overall, 19% of the sample had never been employed or were predominantly unemployed, 35% had an intermittent employment history (significant periods of unemployment), 31% had an unstable employment history (employed for 2+ years, but frequent changing of jobs), and 15% were regularly employed or had a stable employment history. Approximately 31% of the sample had never been married, 48% were divorced or separated, 19% were currently common-law or married, and 1% was widowed.

The average education level attained was 9.5 years (*SD* = 2.6) and the average reading ability grade level was 9.1 (*SD* = 3.4). Approximately 70% of the sample were assessed as having "normal" cognitive functioning (i.e., in the low average to high average ranges), whereas the remaining 30% were assessed as having "impaired" cognitive functioning (i.e., in the extremely low to borderline ranges). Just over one-third of the sample (36%) experienced learning difficulties (e.g., slow learner; learning disorder/disability; functionally illiterate). These findings are broadly consistent with Langevin, Langevin, and Curnoe (2007) who found that, in a sample of 1,823 male offenders (a large proportion of whom were paraphilics and sex offenders), 56.9% were high school dropouts.

Overall, 53% of the sample were assessed as having an Axis I disorder (not including substance use disorders), or major mental illness, according to the Diagnostic and Statistical

Manual of Mental Disorders. Of this subsample, 27% were assessed as having a non-sexual major mental illness (e.g., depression, anxiety, schizophrenia) and 32% were assessed as having a paraphilia (e.g., pedophilia). Approximately 73% of the total sample was assessed as having a substance use disorder (e.g., alcohol or substance abuse or dependence); 67% were assessed as having any Axis II, or personality, disorder (e.g., antisocial personality disorder, borderline personality disorder); and 57% were diagnosed with antisocial personality disorder or traits.

Regarding criminal history, the average age at first adjudicated sexual offense was 25 years (*SD* = 8.8). The average number of prior offenses was as follows: 2.2 (*SD* = 2.7) sexual offenses; 2.6 (*SD* = 3.6) non-sexual violent offenses; and 10.5 (*SD* = 12.5) non-sexual non-violent offenses. The average number of prior sentencing dates was 7.7 (*SD* = 7.2). Based on Static-99R total scores, 8% of the sample was low risk, 16% were medium-low risk, 34% were medium-high risk, and 42% were high risk. As such, the sample was predominantly higher risk. Regarding institutional behavior, 42% of the sample exhibited institutional problems, 27% of which were minor problems (e.g., inappropriate comments, arguments, verbal threats, possession of contraband) and 15% of which were major problems (e.g., physical assault, fights, aggressive behavior). The average number of institutional incidents was as follows: 3.4 (*SD* = 10.9) total; 3.5 (*SD*= 8.9) minor; 0.8 (*SD* = 2.0) major; 3.0 (*SD* = 9.3) non-violent; 0.8 (*SD* = 1.6) violent.

Overall, 74% of the sample successfully completed the Clearwater Sex Offender Treatment Program. Of the 26% who did not successfully complete the program, 13% unsuccessfully completed the program (e.g., attended all of the sessions, but failed to successfully complete all of the work) and another 13% were discharged. The mean length of stay in the program was 7 months (*SD* = 2.4).

2.2 Sex Offender Classification

For the current study, participants were classified according to sex offender type, based on victim characteristics. Classifications were made in accordance with the Violence Risk Scale – Sexual Offender version (VRS-SO) descriptions of sex offender types. Rapists were defined as having sexually offended against adult (usually female) victims only. According to the VRS-SO scoring manual, "adult" is defined as 14 years of age or older. Further, according to the VRS-SO manual, Hebephiles, who are attracted to pubescent (but not pre-pubescent) individuals, are classified as rapists. Child molesters were defined as having sexually offended against child (female or male) victims only. These victims would be under the age of 14 and have an absence

of secondary sex characteristics (e.g., breasts, pubic hair). Mixed offenders were defined as having sexually offended against both adult and child victims and generally not discriminating according to victim age. Incest offenders were defined as having sexually offended against related victims predominantly (e.g., daughter/son, niece/nephew). Incest offenders could have non-related victims as long as the majority of their victims were related. According to these classifications, 45.5% of the sample were rapists, 22% were child molesters, 20% were mixed offenders, and 12.5% were incest offenders.

Table 2.1

Clearwater Program Participant Characteristics

Measure	Mean (SD)	Frequency (%)
Demographics		
Age at program admission	36 (10.2)	-
Age at release to community	39 (10.4)	-
Aboriginal descent	-	49
Predominantly unemployed	-	19
Single/never married	-	31
Education (years)	9.5 (2.6)	-
Reading ability (grade level)	9.1 (3.4)	-
Impaired cognitive ability	-	30
Learning difficulties	-	36
Mental Health		
Major mental illness	-	27
Paraphilia	-	32
Substance use disorder	-	73
Personality disorder	-	67
Antisocial personality disorder/traits	-	57
Criminal History		
Age at 1st sexual offense	25 (8.8)	-
Prior sexual offenses	2.2 (2.7)	-
Prior non-sexual violent offenses	2.6 (3.6)	-
Prior non-sexual non-violent offenses	10.5 (12.5)	-
Prior sentencing dates	7.7 (7.2)	-
Offense-related		
Medium-high/high risk	-	76
Rapists	-	45.5
Child Molesters	-	22
Mixed offenders	-	20
Incest offenders	-	12.5
Institutional Behavior		
Institutional problems	-	42
Total institutional incidents	3.4 (10.9)	-
Program-related		
Program length (months)	7 (2.4)	-
Successful completion	-	74
Unsuccessful completion	-	26

2.3 The Clearwater Sex Offender Treatment Program

The Clearwater Sex Offender Treatment Program (now the Wellspring Mental Health Intervention Program for Sex Offenders) was delivered at the Regional Psychiatric Centre (RPC), located in Saskatoon, Saskatchewan, Canada. The RPC is a Correctional Service of Canada (CSC) multi-level security forensic psychiatry facility. The following information regarding the Clearwater Program was obtained predominantly from the program information and treatment manual at the RPC. The Clearwater Program was delivered on the Clearwater Unit of the RPC, a 48-bed unit specifically for sex offenders. The Clearwater Program was a high-intensity program and admitted high risk, high need sex offenders. In order to be admitted to the program, offenders must have met at least one of the following inclusion criteria: have an Axis I diagnosis (i.e., a mental disorder) and/or multi-morbidity concerns (e.g., mental health and substance abuse concerns); have an Axis II diagnosis (i.e, a personality disorder) that prohibits them from accessing regular programming; have a dysfunction of the brain (e.g., organic brain disorders); or have low functional/intellectual ability. The target group was sex offenders assessed as medium to high risk to sexually reoffend who had special treatment, or responsivity, needs and would therefore not be suitable for other institutionally-based programs (e.g., the National Sex Offender Program). It was stipulated that responsivity issues (e.g., cognitive deficits, substance abuse, head injury, mental disorders, or behavioral problems) took precedence over risk level, thus if an offender was low risk but high need he would accepted into the program. This accounts for the 24% of the current sample who were assessed as low to medium-low risk on the Static-99R.

The Clearwater Program has existed at the RPC since the early 1980s (Olver & Wong, 2013). Between 1998 and 2001, the Clearwater Program was approximately 6 to 8 months in duration (typically 6 months during the former years, increasing to 8 months in the latter years). It was empirically-based, drawing from various program models, including forensic psychiatric rehabilitation, cognitive-behavioral therapy, relapse prevention principles, and stages of change. It employed an interdisciplinary and multimodal approach to treatment, utilizing group and supplemental individual therapy and encompassing skills training. Group facilitators and primary therapists typically had backgrounds in social work or nursing and sometimes psychology. Group treatment was provided in small groups of 6 to 8 participants, for two hours a day from Monday to Friday, and consisted of ten treatment modules, addressing issues such as

social skills, distorted thinking, aggression, stress management, sexuality, relationships, leisure, precursors to offending, high risk situations, and relapse prevention. Program objectives included eliminating sexually aggressive behavior, improving the ability to function pro-socially, and increasing successful reintegration. This administration format is consistent with the suggestion that, with high-intensity programs, modules should be presented daily with at least 15 hours of therapy per week and a duration of 8 months (Olver & Wong, 2013)

2.4 Materials

Materials included offender information accessed through electronic copies of treatment files obtained from the Offender Management System (OMS). This information was used to code the data collection protocol as well as the risk assessment measures and clinical rating scales, including the Static-99, the Static-99R, the STABLE 2007, the Violence Risk Scale-Sexual Offender version (VRS-SO) and the Treatment Readiness, Responsivity, and Gain Scale: Short Version (TRRG:SV). Recidivism data was accessed through the Canadian Police Information Centre (CPIC).

2.4.1 Static-99.

The Static-99 (Hanson & Thornton, 1999; Appendix A) is a static actuarial risk assessment measure designed to be used with sexual offenders. It consists of 10 static items related to sexual and nonsexual offense history, victim characteristics, and offender demographics. The items are rated on a 0 to 1 scale with the exception of Prior Sex Offenses, which is rated on a 0 to 3 scale. Total scores range from 0 to 12 and can be translated into four risk categories: low (0-1), moderate-low (2-3), moderate-high (4-5), and high (6-12). Validation of the Static-99 (Harris, Phenix, Hanson, & Thornton, 2003) indicated that the risk categories corresponded to the following base rates of sexual and violent (including sexual) reconviction at10 years of follow-up. Low: 7-11% sexual, 12-17% violent; moderate-low: 13-14% sexual, 25-27% violent; moderate-high: 31-38% sexual, 44-48% violent; and high: 45% sexual, 51% violent. The Static-99 is a well-validated and widely used measure to assess risk for sexual recidivism. Original validation results indicated moderate predictive accuracy for both sexual recidivism (r = .33, AUC = .71, d = .78) and violent (including sexual) recidivism (r = .32, AUC = .69, d = .71;Hanson & Thornton, 1999). More recently, meta-analytic results have also supported the predictive accuracy of the Static-99 for sexual recidivism (d = .67) and violent (including sexual) recidivism (d = .57) recidivism (Hanson & Morton-Bourgon, 2009).

2.4.2 Static-99R.

The Static-99R (Helmus, Babchishin, Hanson, & Thornton, 2009; Appendix B) is the revised version of the Static-99. The revision was based on the premise that risk for sexual recidivism decreases with age (see Helmus et al., 2012, described previously in the Risk Assessment with Sex Offenders section). Like the Static-99, the Static-99R also consists of 10 static items, or risk factors, and 9 of the 10 items retained the same coding scheme as in the Static-99. The coding scheme for the risk factor relating to age at time of release was altered. On the Static-99, "Young" was coded from 0 to 1, as follows: Aged 18 to 24.99 = 1 and Aged 25 or older = 0. On the Static-99R, "Young" was coded from -3 to 1 (to account for the finding that risk decreases with age), as follows: Aged 18 to 34.9 = 1, Aged 35 to 39.9 = 0, Aged 40 to 59.9 = -1, and Aged 60 or older = -3. As such, Static-99R total scores range from -3 to 12. Like the Static-99, total scores can be translated into four risk categories: low (-3 to 1), low-moderate (2 to 3), moderate-high (4 to 5), and high (6 to 12).

In comparing the Static-99 and Static-99R in the validation sample, Helmus et al. (2009) found that age at release incrementally added to the predictive accuracy of the Static-99 (χ^2 = 7.87, p = .005), but not the Static-99R (χ^2 = 0.66, p = .42), indicating that the Static-99 did not adequately account for age at release while the Static-99R did. Additionally, the Static-99R demonstrated increased predictive accuracy compared to the Static-99. Predictive accuracy statistics at the 5-year follow-up mark were Static-99 AUC = .713 and Static-99R AUC = .720 for sexual recidivism and Static-99 AUC = .695 and Static-99R AUC = .715 for violent recidivism. At the 10-year follow-up mark, Static-99 AUC = .706 and Static-99R AUC = .710 for sexual recidivism and Static-99 AUC = .692 and Static-99R AUC = .713 for violent recidivism (Helmus et al., 2009; Hemlus et al. 2012). Meta-analytic results have also supported the predictive accuracy of the Static-99R for sexual recidivism (AUC = .69; Helmus, Hanson, Thornton, Babchishin, & Harris, 2012).

Babchishin, Blais, and Helmus (2012) found that both Static-99 and Static-99R total scores demonstrated similar predictive accuracy for Aboriginal and non-Aboriginal sex offenders. Specifically, Static-99 and Static-99R total scores significantly predicted sexual recidivism for Aboriginal offenders (AUC = .698 and .713 respectively) and these findings were consistent across all five samples in the meta-analysis. The predictive accuracy of both the Static-99 and Static-99R total scores also did not significantly differ between Aboriginal and

non-Aboriginal offenders (for non-Aboriginal offenders, AUC = .726 and .736, respectively). These results replicated the previous finding by Nicholaichuk (2001) that the Static-99 correlated with sexual offenses equally well for Aboriginal and non-Aboriginal groups (AUC = .672 for both groups). These findings suggest that the predictive accuracy of the Static-99 and Static-99R total scores is not substantively impacted by Aboriginal status (Babchishin et al. 2012). Additionally, consistent with previous findings, the Static-99R demonstrated slightly greater predictive accuracy than the Static-99. Given that the Static-99R had been found to demonstrate greater predictive accuracy than the Static-99 (e.g., Babchishin et al., 2012; Helmus et al., 2009), both measures were examined in the present study to contribute to this line of research.

2.4.3 Violence Risk Scale-Sexual Offender Version (VRS-SO).

The VRS-SO (Wong, Olver, Nicholaichuk, & Gordon, 2003; Appendix C) is a clinician-rated scale designed to assess pre- and post-treatment risk for sexual recidivism. It consists of a 7-item Static scale and a 17-item Dynamic scale that are combined to form a total score. The Dynamic scale can be broken down into three factors: Sexual Deviancy, Criminality, and Treatment Responsivity. Dynamic items are rated on a 4-point scale ranging from 0 to 3, with higher ratings indicating increased problems in that area and increased risk for sexual recidivism. Dynamic items rated as a 2 or 3 are considered criminogenic needs and should be targeted in treatment. Total scores can be translated into four risk categories: low (0-20), moderate-low (21-30), moderate-high (31-40), and high (41-72). Recent validation work on the VRS-SO (Olver, Beggs Christofferson, Grace, & Wong, 2013) using two combined samples (N = 538) indicated that the risk categories corresponded to the following base rates of sexual reconviction at five years of follow-up. Low: 0.0%; moderate-low: 5.8%; moderate-high: 12.6%; and high: 37.3%.

The dynamic items are potentially changeable and are thus assessed pre- and post-treatment. A modified application of the Transtheoretical Model of Change (TTM) is used to assess and quantify changes of the dynamic items. The model comprises five stages of change: Precontemplation, Contemplation, Preparation, Action, and Maintenance. At pre-treatment, dynamic items rated 2 or 3 are given a stage of change rating to specify the offender's motivation and readiness for change. At post-treatment, the stages of change are re-rated for these items. Progression through the stages demonstrates the development of improved skills, signifying positive change and risk reduction. Advancement from one stage to the next is scored as a 0.5-point reduction in the pre-treatment rating of the item, progressing two stages is a 1.0-point

reduction, and so on. A reduction is not given, however, for progression from Precontemplation to Contemplation due to a lack of any behavioral change at this level. The point deductions at post-treatment are summed across all the dynamic items identified as treatment targets to arrive at a total change score, which is then subtracted from the total pre-treatment score, providing a total post-treatment score and risk rating.

The VRS-SO has been found to demonstrate robust predictive accuracy. In the validation study, Olver et al. (2007) found that all scales of the VRS-SO (including the static, dynamic, total, and factors pre- and post-treatment) significantly predicted sexual recidivism in a sample of predominantly rapists. To exemplify, the predictive validity of the VRS-SO total pre- and post-treatment was as follows: pre-treatment $r = .32$ and AUC = .71, $p < .001$; post-treatment $r = .34$ and AUC = .72, $p < .001$. In a re-validation study, Beggs and Grace (2010) demonstrated similar results; all VRS-SO scales significantly predicted sexual recidivism in a sample of child molesters. The predictive validity of the VRS-SO Total pre- and post-treatment for sexual recidivism was as follows: pre-treatment $r = .38$ and AUC = .79, $p < .001$; post-treatment $r = .41$ and AUC = .80, $p < .001$.

2.4.4 STABLE 2007.

The STABLE 2007 (Hanson & Harris, 2007; Appendix D) is a dynamic actuarial risk/needs assessment measure designed to assess risk for sexual recidivism and guide the community supervision of sexual offenders. It consists of 13 stable dynamic items or risk factors that are related to recidivism and amenable to change, but tend to remain relatively constant without intervention. The items are assessed using a 3-point rating scale from 0 to 2 (0 = no problem, 1 = some concern/slight problem, and 2 = present/definite concern). Total scores range from 0 to 26 and can be translated into three risk categories: low (0-3), moderate (4-11), and high (12+). The STABLE 2007 was developed on a community sample and the literature currently lacks empirical evidence regarding its utility among an incarcerated sample. Further, while the STABLE 2007 consists of dynamic items, its utility in assessing change has also not yet been examined.

In the validation study of the STABLE 2007 (part of the Dynamic Supervision Project), Hanson et al. (2007) demonstrated the predictive accuracy of the STABLE 2007 as follows: AUC = .67 for sexual recidivism, AUC = .66 for violent (including sexual) recidivism, and AUC = .66 for any recidivism. When the Static-99 and the STABLE 2007 were combined, the

predictive accuracy improved for all outcomes, as follows: AUC = .76, .72, and .70 respectively. The STABLE 2007 was found to be less predictive for Aboriginal compared to Non-Aboriginal offenders for all outcomes, as follows: sexual recidivism AUC = .54 versus .70; violent (including sexual) recidivism AUC = .52 versus .71; and any recidivism AUC = .61 versus .69. For Aboriginal offenders, the STABLE 2007 only significantly predicted any recidivism. Similar results (i.e., lower predictive accuracy rates) were found for "exceptional" offenders (i.e., those with a developmental delay or history of severe mental illness; AUC = .56 to .66).

The predictive validity of the STABLE 2007 for sexual, violent, and any recidivism has been demonstrated elsewhere, for example in a sample of German rapists and child molesters (AUC = .67 to .71, $p < .001$; Eher, Matthes, Schilling, Haubner-MacLean, & Rettenberger, 2012). However, the finding of decreased predictive accuracy among Aboriginal offenders has also been replicated. Helmus, Babchishin, and Blais (2012) found that the STABLE 2007 total score demonstrated lower predictive accuracy among Aboriginal offenders (AUC = .53 to .58) compared to Non-Aboriginal offenders (AUC = .70 to .72) for all outcomes. The differences were significant for violent (including sexual) and any recidivism and approached significance for sexual recidivism.

2.4.5 Treatment Readiness, Responsivity, and Gain Scale: Short Version (TRRG:SV).

The TRRG:SV (Serin, Kennedy, & Mailloux, 2005; Appendix E) is a clinical rating scale designed to assess an offender's readiness for, and responsivity to, treatment as well as subsequent gains the offender has made. There are three domains (Treatment Readiness, Treatment Responsivity, and Treatment Gain), each consisting of eight items. The items are rated on a 4-point scale from 0 to 3, and each one has a specific behavioral anchor and description to assist in scoring. All of the scales are scored in the same direction and in the opposite direction of risk assessment measures. That is, higher scores indicate more positive ratings. For example, a score of 3 on the Treatment Behaviors item (Treatment Readiness scale) is described as "Consistent behavioral indication of good motivation." A score of 3 on the Callousness item (Treatment Responsivity scale) is described as "Takes others' needs into consideration." Individual items are summed to provide a total score for the domain. Treatment Readiness and Responsivity are conceptualized as changeable, therefore they are rated pre- and post-treatment. The amount of change from pre- to post-treatment on each item can range from -

3 to +3 and is summed across all items for a total change score for each domain. The Treatment Gain domain is rated post-treatment and provides an overall estimate of an offender's performance in a correctional program. The ability of the TRRG:SV to predict recidivism has not yet been examined.

2.4.6 Data collection protocol.

A data collection protocol (Appendix F) was developed for the collection of information regarding several key variables required for exploring the proposed areas of examination of this study. These key variables include offender demographics, criminal history, institutional information, program information, psychiatric information, and recidivism.

2.4.7 Treatment attrition.

Treatment attrition was defined as any incomplete or unsuccessful attempt at the Clearwater Sex Offender Program. As such, the treatment attrition group included participants who were discharged from the program as well as those who were deemed to have unsuccessfully completed the program. Program status (i.e., completion or non-completion) was coded according to the designation provided by the program facilitator and author of the final program report. Attrition was coded in both a binary (yes-no successfully completed) and continuous (total number of months in treatment) manner. Treatment Completers were categorized as Successfully Completed the program and Non-completers as Did Not Successfully Complete the program.

2.4.8 Recidivism.

Recidivism was defined as any conviction for a new sexual, non-sexual violent, or general (non-sexual non-violent) offense following first release to the community after program participation. Sexual recidivism was defined as any offense that was clearly sexual in nature or sexually motivated (e.g., sexual assault, sexual interference, possession of child pornography); non-sexual violent recidivism was defined as any offense against a person that was not sexually motivated (e.g., assault, robbery, uttering threats); and general recidivism was defined as any offense that was neither sexual nor violent (e.g., possession of illegal substances, theft, fraud). Recidivism variables were coded in both a binary (yes-no recidivated) and continuous (total number of new offenses) manner.

Three categories of recidivism were examined in the analyses of the current study: 1) sexual reconviction, 2) violent (including sexual) reconviction, and 3) any (sexual, violent, and

general) reconviction. Violent and sexual reconviction were combined consistent with previous studies (e.g., Bonta et al., 2003; Hanson et al., 2007; Helmus, Babchishin, & Blais, 2012; Wakeling, Beech, & Freemantle, 2013) and given low base rates of sexual recidivism and corresponding low statistical power to identify significant results. In their meta-analysis of sexual offender treatment outcome, Hanson et al. (2009) identified 10 studies that examined violent (including sexual) recidivism. Reconviction was chosen as the outcome measure (i.e., as opposed to re-arrest, new charges, re-incarceration, etc.) also consistent with previous studies. For instance, Bonta et al. (2003) remarked that re-arrest tends to yield the highest rates of recidivism (i.e., over-identification) and re-incarceration tends to yield the lowest rates (i.e., under-identification), while reconviction tends to yield more moderate rates and is "a commonly used measure in published research articles" (p. 3). Other studies have demonstrated negligible differences in recidivism rates between charges and convictions (e.g., Hanson & Bussière, 1998; Harris & Hanson, 2004; Helmus 2009, as cited in Helmus et al. 2012; Losel & Schmucker, 2005). Similarly, preliminary results of the current study indicated negligible differences when using charges versus convictions as the outcome criteria.

2.5 Procedure

All materials (risk assessment measures, clinical rating scales, and data collection protocol) were coded from archival offender file information obtained for the entire sample. Pre- and post-treatment ratings were obtained for the VRS-SO, the TRRG:SV, and the STABLE 2007. Readiness scores, dynamic factor scores, and stages of change inferences were assessed pre-treatment to gauge the offender's motivation as well as to identify treatment targets. The measures were rerated post-treatment, change scores were computed, and corresponding reductions in risk were quantified. Twenty-one randomly selected cases were coded by two raters to establish inter-rater reliability. Strategies were implemented to maintain freedom from bias in the ratings. Electronic copies of treatment files were obtained from OMS by a research assistant, sorted according to pre- and post-treatment, and saved on a computer at the RPC for the rater(s). This ensured that the rater(s) were blind to post-treatment information when coding pre-treatment measures and blind to recidivism information until all other coding is complete. Outcome data were retrieved on September 15, 2011 through the Canadian Police Information Centre (CPIC), a national electronic database of officially recorded criminal charges and

convictions. CPIC outcome data were coded and inputted by the author following the rating of study risk measures and key variables.

2.6 Data Preparation

A series of pre-analytic statistical procedures were conducted to describe and summarize the data and to prepare it for inferential statistical analyses (described in Data Analytic Plan below). First, in order to examine treatment-related change, post-treatment scores were subtracted from pre-treatment scores to compute a change score (for the VRS-SO, STABLE 2007, and Treatment Readiness and Responsivity scales). Second, in order to conduct survival analyses, for offenders who recidivated, length of time to recidivism was calculated by subtracting the release date from the reconviction date (for a new sexual, violent, or general offense). For offenders who did not recidivate, the release date was subtracted from the CPIC date. Third, descriptive statistics were obtained for the total sample, including means, variances, standard deviations, ranges, maximum and minimum scores, and frequencies. Overall group differences were examined using one-way analysis of variance (ANOVA); for instance, level of risk, amount of change, and VRS-SO factor scores according to sex offender type. Fourth, in order to ensure fidelity of instrument rating and integrity of data collection, reliability analyses were conducted. Specifically, the interrater reliability of the risk assessment measures and clinician-rated scales was assessed using single measure intraclass correlation coefficients (ICCs, single measure). The internal consistency or reliability of the VRS-SO Static, Dynamic, and Total (Static and Dynamic combined) scales, STABLE 2007, and TRRG:SV Treatment Readiness, Responsivity, and Gain scales was also examined using Chronbach's alpha.

2.7 Data Analytic Plan

2.7.1 Section 1: Validity of the risk assessment measures.

2.7.1.1 Convergent validity.

1. 1) Correlation coefficients were computed between all of the risk assessment measures. Of particular interest, the Static-99 and Static-99R total scores were correlated with the VRS-SO Static scale total score, and the STABLE 2007 total score was correlated with the VRS-SO Dynamic scale total score.

Correlation coefficients represent the magnitude of relationship between two variables. They range from -1.0 to +1.0, with both values reflecting a perfect relationship and a value of 0 indicating no relationship. Positive correlations indicate that, as one variable increases, the other

increases as well (e.g., risk and recidivism). Negative correlations indicate that, as one variable increases, the other decreases (e.g., treatment-related change and recidivism).

2.7.1.2 Predictive validity.

1. 2) Point biserial correlation coefficients and area under the curve (AUC) values were computed for the Static-99, Static-99R, STABLE 2007, and VRS-SO total scores, VRS-SO Static scale and Dynamic scale total scores, and TRRG:SV Treatment Gain scale total score, with respect to sexual, violent, and any recidivism.

AUC values are derived from receiver operator characteristic (ROC) curve analyses. With regard to the present analyses, AUC values represent the probability that a randomly selected recidivist will obtain a higher score on a risk measure (e.g., the Static-99, STABLE 2007, and VRS-SO), or a lower score on a clinical rating scale (e.g., the TRRG:SV), than a randomly selected non-recidivist. AUC values range from 0 to 1.0, with a value of .50 indicating a predictive accuracy equivalent to chance and a value of 1.0 indicating perfect predictive accuracy.. According to the guidelines provided by Rice and Harris (2005), a small effect (d = .20) corresponds to an AUC = .556 and a r_{pb} = .10; a medium effect size (d = .50) corresponds to an AUC = .639 and a r_{pb} = .243; and a large effect (d = .80) corresponds to an AUC = .714 and a r_{pb} = .371.

Correlation coefficients are influenced by the variability in the predictor and outcome variables and as the variance in either variable decreases, the correlation coefficient decreases as well (Hanson, 2008). Further, the correlation coefficient is most impacted when the outcome variable is dichotomous (e.g., yes-no recidivated) and the probability or base rate is less than .50 (Hanson, 2008). Helmus et al. (2012) noted that AUC values are uninfluenced by the outcome variable (e.g., recidivism base rates) and are therefore useful for comparing results across samples (Humphreys & Swets, 1991). AUC values are, however, influenced by the variance of the predictor variable (e.g., risk assessment scores) and will be smaller in samples with less variance (e.g., all high risk or low risk; Helmus et al., 2012; Humphreys & Swets, 1991).

Of note, as demonstrated later in the Results section, the Static-99R achieved greater predictive accuracy than the Static-99. Both measures were used in analyses that described or compared the performance of the measures, whereas the Static-99R was used instead of the Static-99 in analyses that required only one static measure (e.g., Cox regression).

1. 3) Cox regression analyses were used to examine the incremental contributions of the VRS-SO Dynamic scale total score in predicting recidivism over and above the VRS-SO Static scale total score and the Static-99R total score after controlling for risk.

Cox regression analysis provides an odds ratio, termed the exponentiated beta coefficient, or Exp(B), which is an indicator of the change in odds (e.g., of recidivism) resulting from a unit change in the predictor (e.g., risk level). Values greater than 1.0 indicate that as the predictor increases, the odds of that outcome occurring increases (e.g., higher risk, more recidivism); values less than 1.0 indicate that as the predictor increases, the odds of the outcome occurring decreases (e.g., greater change, less recidivism). For every Exp(B), there is a corresponding Wald statistic, which indicates whether the Exp(B) is significantly different from zero (i.e., making a significant contribution to the prediction of outcome); the larger the Wald statistic, the greater the predictive validity (Field, 2009). Helmus et al. (2012) noted that Cox regression is less influenced by range restriction and therefore tends to provide a more stable estimate of predictive accuracy (compared to AUC).

1. 4) The risk measures were subdivided according to risk bins (e.g., low, moderate, and high) and trajectories of recidivism for the different risk groups were examined using survival analyses.

Kaplan-Meier survival analysis depicts the time it takes for events (e.g., recidivism) to occur. It provides a graphical representation of the survival rate as a function of time. For the present study, survival analyses were used to compare recidivism (i.e., the time to first new offense) among groupings of offenders (e.g., low, moderate, and high risk) over the total follow-up period (the maximum follow-up period was 13.9 years). In survival analyses, an offender who did not recidivate is said to "survive." The cumulative proportion of offenders who did recidivate, out of the group being examined, was computed at each time interval (i.e., every 2.5 years). Graphically, this produces a curve that descends as offenders recidivate, typically more steeply during the initial years of follow-up, and often levels out over time as recidivism slows or stops. Helmus et al. (2012) noted that survival analysis corrects for unequal follow-up times by estimating the expected recidivism rate of the sample for a specific follow-up period.

2.7.2 Section 2: Validity of the change measures.

2.7.2.1 Convergent validity.

2. 1) Correlation coefficients were obtained to examine associations among the measures of change; for instance, change on the VRS-SO Dynamic scale and factors was correlated with change on the STABLE 2007 and the TRRG:SV Treatment Readiness and Treatment Responsivity scales; and change on the VRS-SO Dynamic scale was correlated with the TRRG:SV Treatment Readiness scale, Treatment Responsivity scale, and Treatment Gain scale total scores.

2.7.2.2 Predictive validity.

2. 2) Point biserial correlation coefficients and AUC values were computed between the change measures (i.e., change on the VRS-SO Dynamic scale and factors, the STABLE 2007, and the TRRG:SV Treatment Readiness and Treatment Responsivity scales) and recidivism (sexual, violent, and any).

2. 3) Partial correlations were computed to examine the relationship between change and recidivism while controlling for risk, specifically the Static-99R. For partial correlations, this involves holding the static risk level constant for both change and recidivism.

2. 4) Change scores were correlated with their respective pre-treatment scores (e.g., change on the VRS-SO Dynamic scale with the VRS-SO Dynamic scale pre-treatment score) given information in the literature that pre-treatment risk constrains change.

2. 5) Semi-partial correlations were computed to examine the relationship between change and recidivism while controlling for pre-treatment risk. For semi-partial correlations, this involves holding pre-treatment risk level constant for change.

2. 6) Cox regression analyses were performed to examine the relationship of change (as measured by the VRS-SO and the STABLE 2007) to recidivism while controlling for risk.

2. 7) Participants were divided according to risk level (on the Static-99R) and amount of change (on the VRS-SO Dynamic scale) into one of the following four categories: low risk – low change, low risk – high change, high risk – low change, high risk – high change. Using survival analysis, recidivism trajectories were examined for each of these different groups. Change scores on the VRS-SO Dynamic scale were then divided into low change and high change and recidivism trajectories were examined for these two groups with survival analysis.

2.7.3 Section 3: Treatment attrition.

3. 1) Comparisons were conducted between participants who Successfully Completed the program (i.e., Completers) and those who Did Not Successfully Complete the program (i.e.,

Non-completers) on key variables. Chi-square analyses were used for the categorical variables and independent-samples t-tests were used for the continuous variables. The magnitude of relationship between these key variables and binary program status outcome (i.e., successfully completed or did not successfully complete) was examined using phi correlations for the categorical variables and point biserial correlations for the continuous variables.

3. 2) Upon identifying significant predictors of unsuccessful program completion in the previous analyses, discriminant function analysis was performed to examine overall and independent contributions of predictors.

3. 3) Using survival analysis, recidivism trajectories were examined for participants who successfully completed the program compared to those who did not. Additionally, participants were divided according to risk level (on the Static-99R) and program status (i.e., successfully completed or did not) into one of the following four categories: low risk complete, low risk non-complete, high risk complete, high risk non-complete. The recidivism trajectories of these groups were examined with survival analysis.

Chapter 3. Results

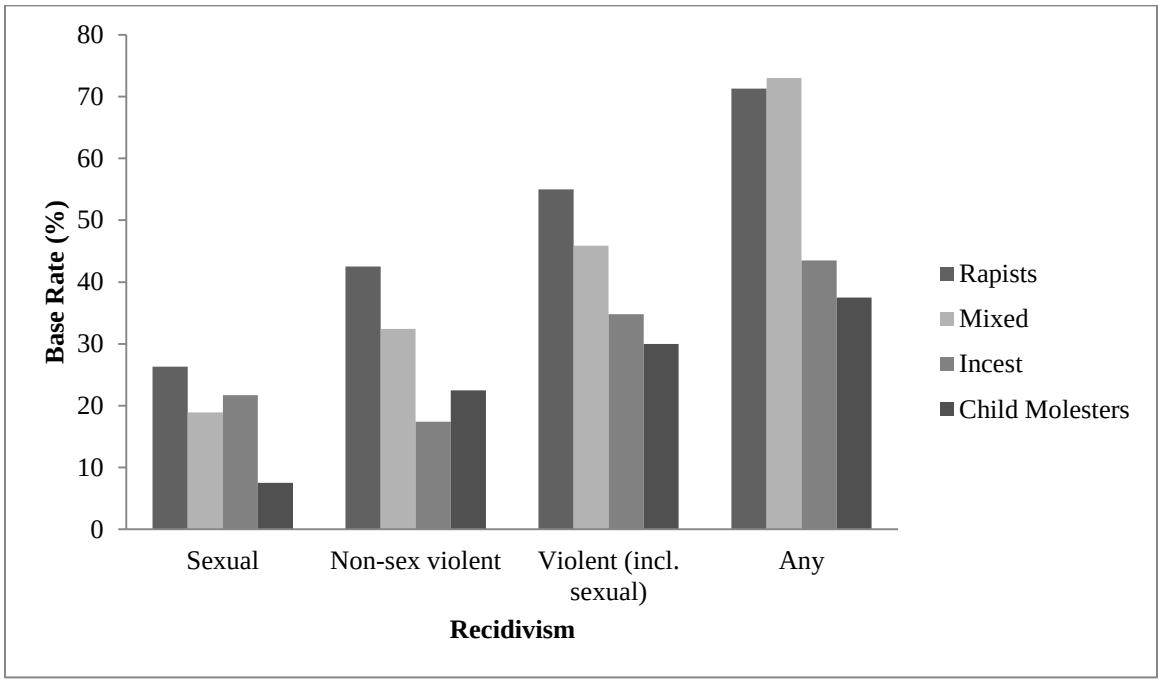
3.1 Base Rates of Recidivism

While the total sample included 185 participants, outcome (i.e., recidivism) data was only available for 180 participants; 2 participants were not released (for the original index offense) at the time of data collection and 3 participants were deported upon release. The sample of 180 participants was followed up for a mean of 9.3 years (*SD* = 3.0), with a range of 0.2 to 13.9 years. With recidivism defined as any conviction for a new sexual, non-sexual violent, or non-violent offense following first release to the community after program participation, the base rates of recidivism were as follows: 20% of the sample had at least one new sexual conviction, 33% had at least one new nonsexual violent conviction, 45% had at least one violent (including sexual) conviction, 49% had at least one nonviolent conviction, and 61% had at least one conviction (i.e., had any reconviction). Figure 3.1 illustrates the recidivism base rates by sex offender type. Overall, rapists and mixed offenders recidivated more than incest offenders and child molesters. For sexual recidivism, however, rapists recidivated the most, followed by incest offenders, then mixed offenders, and lastly child molesters.

Of note, incest offenders demonstrated relatively high rates of recidivism in the current study compared to other studies. For example, in the current study, the sexual recidivism rate of incest offenders was 21.7%, whereas Hanson (2002) reported a rate of 8.4% and Harris and Hanson (2004) reported a rate of 13%. The higher rates of recidivism in the current study may be related to the operationalization of incest offenders, specifically the fact that the incest group potentially comprised both intra- and extra-familial offenders (an offender was deemed an incest offender if the majority of his victims were related even if he had additional non-related victims). Extra-familial child molesters have been found to demonstrate higher rates of recidivism compared to intra-familial child molesters (e.g., Harris and Hanson, 2004). This operationalization, therefore, may have increased the risk level and recidivism rate of the incest offender group.

Figure 3.1

Recidivism Base Rates by Sex Offender Type



3.2 Descriptive Statistics

Means and standard deviations are presented in Table 3.1 for the following risk measures and clinical rating scales: Static-99, Static-99R, VRS-SO Static scale, VRS-SO Dynamic scale pre- and post-treatment, VRS-SO Total (combined Static and Dynamic scales) pre- and post-treatment, VRS-SO factors (Sexual Deviance, Criminality, and Treatment Responsivity) pre- and post-treatment, STABLE 2007 pre- and post-treatment, TRRG:SV Treatment Readiness and Treatment Responsivity scales pre- and post-treatment, and TRRG:SV Treatment Gain scale. Means and standard deviations for the measures of change (pre-treatment minus post-treatment scores) are presented in Table 3.2. Cohen's *d* effect sizes are also presented for the change scores (i.e., to illustrate the magnitude of change), where $d = .20$ is a small effect, $d = .50$ is a medium effect, and $d = .80$ is a large effect (Cohen, 1992).

The mean Static-99 and Static-99R total scores fell within the medium-high risk category; the VRS-SO Total pre-treatment score fell within the high risk category and the Total post-treatment score fell within the moderate-high category; and the STABLE 2007 pre-treatment total score fell within the high risk category and the post-treatment score fell within the moderate risk category (although the mean of 11.8 is approaching the high risk category cut-off

of 12). The VRS-SO Sexual Deviance and Criminality change scores obtained small effect sizes; the VRS-SO Dynamic and Treatment Responsivity and STABLE 2007 change scores obtained medium effect sizes; and the TRRG:SV Treatment Readiness and Treatment Responsivity change scores obtained large effect sizes. These results are consistent with the Clearwater program's admittance of higher risk sex offenders. They also demonstrated overall positive treatment-related changes and corresponding decreases in risk level.

Table 3.1

Risk Measures and Clinical Rating Scales: Means and Standard Deviations

Measure	*M (SD)*
Static-99	5.1 (1.9)
Static-99R	4.9 (2.2)
VRS-SO Static	11.2 (3.6)
VRS-SO Dynamic (pre)	31.2 (5.4)
VRS-SO Dynamic (post)	27.0 (6.0)
VRS-SO Total (pre)	42.2 (7.4)
VRS-SO Total (post)	38.1 (7.6)
VRS-SO Sexual Deviance (pre)	8.9 (3.8)
VRS-SO Sexual Deviance (post)	7.7 (3.2)
VRS-SO Criminality (pre)	10.9 (3.6)
VRS_SO Criminality (post)	9.6 (3.4)
VRS-SO Tx Responsivity (pre)	7.3 (2.3)
VRS-SO Tx Responsivity (post)	6.0 (2.5)
STABLE 2007 (pre)	14.7 (3.4)
STABLE 2007 (post)	11.8 (4.1)
TRRG:SV Tx Readiness (pre)	10.2 (4.0)
TRRG:SV Tx Readiness (post)	14.2 (5.6)
TRRG:SV Tx Responsivity (pre)	9.7 (4.1)
TRRG:SV Tx Responsivity (post)	14.2 (5.7)
TRRG:SV Tx Gain	12.8 (5.6)

Note: Tx = Treatment

Table 3.2

Change Measures: Means, Standard Deviations, and Cohen's d Effect Sizes

Measure	*M (SD)*	Cohen's *d*
VRS-SO Dynamic	-4.2 (3.3)	.74
VRS-SO Sexual Deviance	-1.2 (1.3)	.34
VRS-SO Criminality	-1.3 (1.2)	.37
VRS-SO Tx Responsivity	-1.3 (1.2)	.54
STABLE 2007	-2.9 (2.7)	.77
TRRG:SV Tx Readiness	4.1 (4.0)	.84
TRRG:SV Tx Responsivity	4.6 (4.0)	.93

Note: Tx = Treatment

3.3. Group Differences by Sex Offender Type

A series of one-way ANOVA analyses was conducted using Bonferroni's post-hoc multiple comparisons to compare the four categories of sex offender type on level of risk, VRS-SO factor scores, TRRG:SV scale scores, and amount of change. Table 3.3 illustrates the differences on the risk measures by sex offender type and Table 3.4 illustrates the differences on the measures of change by sex offender type.

On the Static-99R, mixed offenders had the highest mean score, followed by rapists, child molesters, and incest offenders; mixed offenders were significantly higher risk than child molesters ($F = 1.70$, $p < .01$) and incest offenders ($F = 2.73$, $p < .01$), and rapists were significantly higher risk than incest offenders ($F = 1.90$, $p < .01$). The VRS-SO Static scale results were somewhat different than the Static-99R results: mixed offenders had the highest mean score again, but were followed by child molesters, then rapists, and incest offenders; mixed offenders were significantly higher risk than child molesters ($F = 2.31$, $p < .01$), rapists ($F = 3.68$, $p < .01$), and incest offenders ($F = 6.48$, $p < .01$); child molesters were significantly higher risk than incest offenders ($F = 4.18$, $p < .01$); and rapists were significantly higher risk than incest offenders ($F = 2.80$, $p < .01$). These latter results are consistent with the VRS-SO Static scale item Sex Offender Type, which specifies the same order of risk (i.e., mixed offenders = 3, child molesters = 2, rapists = 1, incest offenders = 0).

Additional notable comparisons include the VRS-SO Sexual Deviance and Criminality factors (the *F*-statistics below are for pre-treatment scores, but post-treatment scores followed the same patterns of statistical significance). Incest offenders had the highest mean Sexual Deviance score, followed by child molesters, mixed offenders, and rapists; incest offenders, child

molesters, and mixed offenders were all significantly more sexually deviant than rapists (F = 4.68, $p < .01$, F = 4.47, $p < .01$, and F = 2.58, $p < .01$, respectively). That is, rapists had the lowest mean Sexual Deviance score and all other sex offender types were higher and statistically similar. Rapists had the highest Criminality score, followed by mixed offenders, incest offenders, and child molesters; mixed offenders and rapists were significantly more criminally-oriented than incest offenders (F = 3.22, $p < .01$ and F = 3.15, $p < .01$ respectively) and child molesters (F = 3.72, $p < .01$ and F = 3.65, $p < .01$ respectively).

Regarding the VRS-SO Dynamic scale pre-treatment (there were no significant group differences for post-treatment), mixed offenders had the highest mean score, followed by incest offenders, child molesters, and rapists; the only significant difference, however, was between mixed offenders and rapists (F = 4.01, $p < .01$). It can be inferred that the incest offenders' high mean Sexual Deviance score increased their risk level standing on the VRS-SO Dynamic scale compared to the VRS-SO Static scale. The VRS-SO Total (Static and Dynamic scales combined) followed the same ordering as the VRS-SO Static scale (i.e., mixed offenders were highest risk, followed by child molesters, rapists, and incest offenders).

There were no significant group differences by sex offender type for the VRS-SO Treatment Responsivity factor, the STABLE 2007, and the TRRG:SV Treatment Readiness, Responsivity, and Gain scales. That is, the STABLE 2007 does not appear to differentiate risk level according to sex offender type, and all types of sex offenders demonstrated statistically similar levels of treatment readiness, responsivity, and gain.

Regarding the measures of change, significant group differences were observed for the VRS-SO Sexual Deviance and Criminality factors. For the Sexual Deviance factor, incest offenders made the highest amount of change, followed by child molesters, mixed offenders, and rapists; incest offenders and child molesters made significantly more change than rapists (F = .81, $p < .05$ and F = .73, $p < .05$ respectively). For the Criminality factor, mixed offenders made the highest amount of change, followed by rapists, child molesters, and incest offenders; the only significant difference, however, was between mixed offenders and incest offenders (F = .90, $p < .05$). Both of these patterns of findings are intuitive based on the premise that offenders with higher risk scores (i.e., incest offenders and child molesters for Sexual Deviance and mixed offenders and rapists for Criminality) generally have a greater capacity to make higher amounts of change.

Table 3.3

Group Differences on Risk Measures and Clinical Rating Scales by Sex Offender Type: One-Way Analysis of Variance

Measure	*Mean Square*	*F*
Static-99R	47.07	9.73**
VRS-SO Static	223.63	23.85**
VRS-SO Dynamic (pre)	139.89	5.13**
VRS-SO Dynamic (post)	59.39	1.64
VRS-SO Total (pre)	598.10	13.14**
VRS-SO Total (post)	440.52	8.47**
VRS-SO Sexual Deviance (pre)	254.19	25.20**
VRS-SO Sexual Deviance (post)	176.54	23.00**
VRS-SO Criminality (pre)	171.11	16.52**
VRS_SO Criminality (post)	136.05	13.93**
VRS-SO Tx Responsivity (pre)	4.91	.93
VRS-SO Tx Responsivity (post)	3.48	.54
STABLE 2007 (pre)	27.20	2.36
STABLE 2007 (post)	12.47	.76
TRRG:SV Tx Readiness (pre)	19.75	1.22
TRRG:SV Tx Readiness (post)	9.94	.32
TRRG:SV Tx Responsivity (pre)	29.63	1.77
TRRG:SV Tx Responsivity (post)	21.23	.64
TRRG:SV Tx Gain	13.22	.41

Note: Tx = Treatment; ** = $p < .01$

Table 3.4

Group Differences on Change Measures by Sex Offender Type: One-Way Analysis of Variance

Measure	*Mean Square*	*F*
VRS-SO Dynamic	17.14	1.60
VRS-SO Sexual Deviance	7.07	4.48**
VRS-SO Criminality	5.15	3.61*
VRS-SO Tx Responsivity	3.46	2.30
STABLE 2007	4.08	.55
TRRG:SV Tx Readiness	7.04	.44
TRRG:SV Tx Responsivity	3.35	.21

Note: Tx = Treatment; ** = $p < .01$; * = $p < .05$

3.4 Reliability Analyses

3.4.1 Inter-rater reliability.

The inter-rater reliability (IRR) of the risk measures and clinical rating scales (see Table 3.5) and the change measures (see Table 3.6) was assessed on 21 randomly selected cases and analyzed using single measure intraclass correlation coefficients (ICCs). Two sets of results are presented: "with outlier" (n=21) and "outlier removed" (n=20). One case was considered an outlier due to a 10-point difference on the VRS-SO Total pre-treatment score and a 13-point difference on the VRS-SO Total post-treatment score between the two raters; there was also an 8-point difference on the STABLE 2007 pre-treatment total score and a 7-point difference on the STABLE 2007 post-treatment total score for this case; differences on the TRRG:SV total scores ranged from 1-point to 7-points. Differences between raters of this magnitude were not observed for any of the other 20 inter-rater cases. As such, IRR was analyzed with and without the outlier case. It is suggested that the "with outlier" IRR results may be not be as representative as the "outlier removed" IRR results; that is, the results including the outlier may reflect an underestimate of the overall IRR of the study.

Regarding the VRS-SO IRR results for the scale totals, all reported ICCs were significant at $p < .001$. Overall, while the results were higher for the condition with the outlier removed, the differences were not significant (i.e., the significance values did not change). The following results are summarized for the "outlier removed" condition: Dynamic (pre) ICC = .86, (post) ICC = .87; Total (pre) ICC = .95, (post) ICC = 93; Sexual Deviance (pre) ICC = .90, (post) ICC = 91; Criminality (pre) ICC = .84, (post) ICC = .82; Treatment Responsivity (pre) ICC = .74, (post) ICC = .81. These results are consistent with previous VRS-SO validation studies (see Beggs & Grace, 2010 and Olver et al., 2007). Regarding the results for the VRS-SO change measures, all reported ICCs were significant, with a range from $p < .001$ to $p < .05$. Similar to the results for the scale totals, overall, the significance values did not change for the "outlier removed" condition, except for the Criminality factor (which changed from $p < .01$ to $p < .001$). Again, the following results are summarized for the "outlier removed" condition: Dynamic (change) ICC = .84; Sexual Deviance (change) ICC = .72; Criminality (change) ICC = .65; Treatment Responsivity (change) ICC = .46.

Regarding the IRR for the other measures, again the results were higher for the "outlier removed" condition, but the significance values did not differ between conditions. Consistent

with the above-reported results, the following results are for the "outlier removed" condition. The Static-99 and VRS-SO Static scale were significant at the $p < .001$ level: Static-99 ICC = .97; VRS-SO Static ICC = .97. The STABLE 2007 IRR varied, improving post-treatment: STABLE 2007 (pre) ICC = .46 ($p < .05$), (post) ICC = .61 ($p < .01$), and (change) ICC = .83 ($p < .001$). The TRRG:SV scales and change measures were all significant at the $p < .001$ level: Treatment Readiness (pre) ICC = .79, (post) ICC = .95, (change) = .85; Treatment Responsivity (pre) ICC = .70, (post) ICC = .91, (change) ICC = 76; and Treatment Gain ICC = .96.

Table 3.5

Inter-Rater Reliability of Risk Measures and Clinical Rating Scales: Single Measure Intraclass Correlation Coefficients

	Chronbach's Alpha	Intraclass Correlation	
Measure	With outlier	With outlier	Outlier removed
Static-99	.98	.97***	.97***
VRS-SO Static	.99	.97***	.97***
VRS-SO Dynamic (pre)	.84	.73***	.86***
VRS-SO Dynamic (post)	.85	.74***	.87***
VRS-SO Total (pre)	.95	.90***	.95***
VRS-SO Total (post)	.92	.86***	.93***
VRS-SO Sexual Deviance (pre)	.92	.85***	.90***
VRS-SO Sexual Deviance (post)	.92	.85***	.91***
VRS-SO Criminality (pre)	.91	.84***	.84***
VRS-SO Criminality (post)	.90	.82***	.82***
VRS-SO Tx Responsivity (pre)	.78	.64***	.74***
VRS-SO Tx Responsivity (post)	.83	.81***	.81***
STABLE 2007 (pre)	.55	.38*	.46*
STABLE 2007 (post)	.72	.56**	.61**
TRRG:SV Tx Readiness (pre)	.88	.79***	.79***
TRRG:SV Tx Readiness (post)	.97	.94***	.95***
TRRG:SV Tx Responsivity (pre)	.84	.73***	.70***
TRRG:SV Tx Responsivity (post)	.94	.89***	.91***
TRRG:SV Tx Gain	.98	.95***	.96***

Note: Tx = Treatment; *** = $p < .001$; ** = $p < .01$; * = $p < .05$

Table 3.6

Inter-Rater Reliability of Change Measures: Single Measure Intraclass Correlation Coefficients

	Chronbach's Alpha	Intraclass Correlation	
Measure	With outlier	With outlier	Outlier removed
VRS-SO Dynamic	.91	.83***	.84***
VRS-SO Sexual Deviance	.84	.73***	.72***
VRS-SO Criminality	.75	.60**	.65***
VRS-SO Tx Responsivity	.62	.44*	.46*
STABLE 2007	.91	.83***	.83***
TRRG:SV Tx Readiness	.92	.85***	.85***
TRRG:SV Tx Responsivity	.83	.71***	.76***

Note: Tx = Treatment; *** = $p < .001$; ** = $p < .01$; * = $p < .05$

3.4.2 Internal consistency reliability.

The internal consistency reliability of the Static-99R, VRS-SO, STABLE 2007, and TRRG:SV was examined through Chronbach's alpha (see Table 3.7). The static measures (i.e., the Static-99, Static-99R, and VRS-SO Static) evidenced low internal consistency ($\alpha = .32, .28$, and .48 respectively) indicating heterogeneity of item content. Overall, the dynamic measures evidenced higher internal consistency, particularly the post-treatment measures: VRS-SO Dynamic (post) $\alpha = .71$; STABLE 2007 (post) $\alpha = .74$; TRRG:SV Treatment Readiness (post) $\alpha = .92$; TRRG:SV Treatment Responsivity (post) $\alpha = .94$; and TRRG:SV Treatment Gain (rated post-treatment) $\alpha = .95$. The internal consistency values may be higher post-treatment than pre-treatment for a number of reasons: more information is available to rate the items post-treatment, enabling more accurate ratings; the measures of change demonstrated good reliability and validity, potentially augmenting the reliability and validity of the post-treatment scores; and the provision of intervention may have homogenized the sample post-treatment compared to pre-treatment.

Table 3.7

Scale Reliability: Internal Consistency of Risk Measures and Clinical Rating Scales

Measure	Chronbach's Alpha
Static-99	.32
Static-99R	.28
VRS-SO Static	.48
VRS-SO Dynamic (pre)	.31
VRS-SO Dynamic (post)	.71
STABLE 2007 (pre)	.57
STABLE 2007 (post)	.74
TRRG:SV Tx Readiness (pre)	.73
TRRG:SV Tx Readiness (post)	.92
TRRG:SV Tx Responsivity (pre)	.77
TRRG:SV Tx Responsivity (post)	.94
TRRG:SV Tx Gain	.95

Note: Tx = Treatment

3.5 Section 1: Convergent Validity of Risk Measures

The Static-99, Static-99R, VRS-SO Static, VRS-SO Dynamic (pre- and post-treatment), and STABLE 2007 (pre- and post-treatment) total scores were correlated with each other to assess the convergent validity of the risk measures (see Table 3.8). All of the correlations were positive and significant at the $p < .01$ level. Of particular interest, the static measures (i.e., the Static-99, Static-99R, and VRS-SO Static) were all highly correlated (r's = .89, .71, and .69), as were the dynamic measures (i.e., the VRS-SO Dynamic and STABLE 2007) pre-treatment (r = .66) and post-treatment (r = .75). Further, the VRS-SO Dynamic pre- and post-treatment scores were highly correlated (r = .82), as were the STABLE 2007 pre- and post-treatment scores (r = .74).

The VRS-SO total scores (Dynamic and Total) pre- and post-treatment were also correlated with the TRRG:SV total scores (Treatment Readiness and Responsivity pre- and post-treatment and Treatment Gain) to assess the convergence of these measures (see Table 3.9). All of the correlations were negative and significant at the $p < .01$ level. Negative correlations would be expected given that higher VRS-SO scores indicate higher risk and higher TRRG:SV scores indicate higher treatment readiness, responsivity, and gain. These correlations indicate that the higher the TRRG:SV scores are, the lower the VRS-SO scores are likely to be (i.e., the higher the treatment readiness, responsivity, and gain, the lower the risk). Overall, the

convergent validity results support the relatedness or accordance of the risk measures and clinical rating scales utilized in the study.

Table 3.8

Convergent Validity: Correlations among the Risk Measures

	Static-99R	VRS-SO Static	VRS-SO Dynamic (pre)	VRS-SO Dynamic (post)	STABLE 2007 (pre)	STABLE 2007 (post)
Static-99	.89**	.71**	.34**	.24**	.42**	.29**
Static-99R		.69**	.29**	.24**	.42**	.32**
VRS-SO Static			.35**	.21**	.39**	.25**
VRS-SO Dynamic (pre)				.82**	.66**	.55**
VRS-SO Dynamic (post)					.61**	.75**
STABLE 2007 (pre)						.74**

Note: ** = $p < .01$

Table 3.9

Convergent Validity: Correlations between VRS-SO and TRRG:SV Pre- and Post-Treatment Total Scores

	TRRG:SV Tx Readiness (pre)	TRRG:SV Tx Readiness (post)	TRRG:SV Tx Responsivity (pre)	TRRG:SV Tx Responsivity (post)	TRRG:SV Tx Gain
VRS-SO Dynamic (pre)	-.57**	-.40**	-.59**	-.40**	-.30**
VRS-SO Dynamic (post)	-.62**	-.72**	-.66**	-.72**	-.65**
VRS-SO Total (pre)	-.54**	-.34**	-.55**	-.34**	-.26**
VRS-SO Total (post)	-.60**	-.61**	-.63**	-.61**	-.55**

Note: Tx = Treatment; ** = $p < .01$

3.6 Section 1: Predictive Validity of Risk Measures

3.6.1 Correlations and area under the curve.

The predictive validity of the risk measures and clinical ratings scales was examined with respect to sexual recidivism, violent (including sexual) recidivism, and any recidivism (see Table

3.10). Recidivism was defined as any new conviction following first release to the community after program participation. Recidivism was coded in a binary fashion (i.e., yes/no). The average follow-up time was 9.3 years. Predictive validity was examined through two methods: 1) Point biserial correlation coefficients (i.e., r_{pb}), and 2) area under the curve (AUC) values.

The measures that were found to significantly predict sexual recidivism at the $p < .05$ level were: the VRS-SO Dynamic pre-treatment, VRS-SO Total pre- and post-treatment, STABLE 2007 pre-treatment, VRS-SO Treatment Responsivity factor post-treatment, TRRG:SV Treatment Readiness and Responsivity pre-treatment, and TRRG:SV Treatment Gain. The measures that were found to predict sexual recidivism to an even greater degree, at the $p < .01$ level, were: the VRS-SO Dynamic post-treatment, and VRS-SO Criminality factor pre- and post-treatment, and TRRG:SV Treatment Readiness and Responsivity post-treatment. The remaining measures (i.e., the Static-99, Static-99R, VRS-SO Static, STABLE 2007 pre-treatment, VRS-SO Sexual Deviance factor pre- and post-treatment, and VRS-SO Treatment Responsivity factor pre-treatment) were not found to significantly predict sexual recidivism. Overall, the predictive validity effect size magnitudes for sexual recidivism were higher for post-treatment measures compared to pre-treatment measures and for the dynamic measures compared to the static measures.

The majority of the risk measures and clinical rating scales were found to significantly predict violent (including sexual) recidivism at the $p < .01$ level. The Static-99, VRS-SO Static, and VRS-SO Sexual Deviance factor pre- and post-treatment, however, were not found to significantly predict violent, including sexual, recidivism. The risk measures and clinical rating scales performed somewhat better in the prediction of violent (including sexual) recidivism compared to the prediction of sexual recidivism alone. One possible explanation for this finding is that the base rate for violent (including sexual) recidivism was higher than for sexual recidivism alone (45% compared to 20%), which would provide more statistical power to find significant results.

Again, the majority of the risk measures and clinical ratings scales were found to significantly predict any recidivism at the $p < .01$ level. The VRS-SO Criminality factor pre- and post-treatment was a particularly strong predictor of any recidivism ($r_{pb} = .48$ and .44, respectively). The Static-99 and VRS-SO Static were predictive at the $p < .05$ level. In general, the risk measures and clinical ratings scales performed even better in the prediction of any

recidivism compared to violent (including sexual) recidivism, again possibly attributable to the higher base rate of any recidivism (61%).

Interestingly, the VRS-SO Sexual Deviance factor was significantly negatively correlated with any recidivism, at the $p < .01$ level pre-treatment and $p < .05$ level post-treatment. This means that the higher the Sexual Deviance score, the lower the likelihood of any recidivism. Any recidivism encompasses sexual, nonsexual violent, and nonviolent reconviction. Upon further examination of the relationship between sexual deviance and any recidivism, it was found that nonsexual violent reconviction was significantly inversely related to sexual deviance pre- and post-treatment (r_{pb} = -.22 and -.20, $p < .01$), as was nonviolent reconviction pre- and post-treatment (r_{pb} = -.25 and -.21, $p < .01$). This relationship has been demonstrated previously; for example, Olver and Wong (2006) found that sexual deviance (as assessed by the VRS-SO) was negatively correlated with all nonsexual recidivism criteria and significantly negatively correlated with any nonsexual violence and any nonsexual conviction recidivism variables.

Some overall conclusions regarding the predictive validity of the risk measures and clinical ratings scales are as follows: post-treatment measures demonstrated somewhat greater predictive validity than pre-treatment measures, particularly for sexual recidivism; the differences were not as marked for violent (including sexual) recidivism and were practically non-existent for any recidivism. Dynamic measures demonstrated higher predictive validity magnitudes than the static measures, except that the Static-99R performed quite well, and comparable to the dynamic measures, in the prediction of violent (including sexual) and any recidivism. Given that the Static-99R outperformed the Static-99 in terms of predictive validity, the Static-99R was used in place of the Static-99 for subsequent analyses. It is possible that the differing base rates of recidivism (sexual = 20%, violent including sexual = 45%, and any = 61%) and the corresponding degrees of statistical power affected the significance levels of the results. And, finally, not only the risk measures were predictive of recidivism, but the clinical rating scales were predictive as well (i.e., the TRRG:SV Treatment Readiness, Responsivity, and Gain scales) and to a comparable degree.

Table 3.10

Predictive Validity: Correlations and AUCs between the Risk Measures and Clinical Rating Scales and Outcome

	Sexual Recidivism			Violent Recidivism			Any Recidivism		
Measure	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
Static-99	.01	.52	.43, .62	.11	.56	.48, .65	.17*	.60*	.51, .69
Static-99R	.06	.55	.45, .65	.23**	.62**	.54, .70	.29**	.66**	.58, .74
VRS-SO Static	.04	.53	.43, .64	.11	.57	.49, .66	.16*	.59*	.51, .68
VRS-SO Dynamic (pre)	.17*	.63*	.53, .73	.26**	.65**	.57, .73	.27**	.66**	.58, .74
VRS-SO Dynamic (post)	.20**	.64*	.53, .74	.32**	.68**	.60, .76	.28**	.66**	.58, .74
VRS-SO Total (pre)	.15*	.61*	.51, .71	.24**	.63**	.55, .71	.28**	.65**	.56, .73
VRS-SO Total (post)	.18*	.62*	.52, .72	.30**	.66**	.58, .74	.30**	.66**	.58, .74
VRS-SO Sex. Dev. (pre)	-.07	.46	.34, .57	-.14	.42*	.33, .50	-.20**	.38**	.29, .46
VRS-SO Sex. Dev. (post)	-.03	.48	.36, .60	-.09	.44	.36, .53	-.18*	.40*	.31, .48
VRS-SO Criminality (pre)	.22**	.65**	.57, .74	.40**	.72**	.65, .80	.48**	.78**	.71, .86
VRS-SO Criminality(post)	.21**	.66**	.57, .76	.38**	.72**	.65, .80	.44**	.77**	.69, .84
VRS-SO Tx Resp. (pre)	.11	.59	.49, .69	.21**	.62**	.53, .70	.22**	.62**	.53, .71
VRS-SO Tx Resp. (post)	.16*	.62*	.51, .72	.23**	.65**	.57, .73	.22**	.64**	.56, .73
STABLE 2007 (pre)	.11	.56	.45, .66	.29**	.62**	.57, .73	.22**	.62**	.54, .71
STABLE 2007 (post)	.15*	.58	.46, .69	.29**	.66**	.58, .74	.20**	.62**	.53, .70
TRRG:SV Tx Read. (pre)	-.17*	.62*	.52, .72	-.24**	.63**	.55, .71	-.20**	.62**	.53, .70
TRRG:SV Tx Read. (post)	-.22**	.63**	.53, .74	-.31**	.67**	.60, .75	-.21**	.62**	.54, .70
TRRG:SV Tx Resp. (pre)	-.18*	.63**	.54, .73	-.26**	.64**	.56, .72	-.23**	.64**	.56, .72
TRRG:SV Tx Resp. (post)	-.24**	.64**	.54, .75	-.32**	.68**	.60, .74	-.23**	.63**	.55, .72
TRRG:SV Tx Gain	-.17*	.61*	.50, .72	-.29**	.66**	.58, .74	-.20**	.61*	.53, 69

Note: Tx = Treatment; Sex. Dev. = Sexual Deviance; Resp. = Responsivity; Read. = Readiness; ** = $p < .01$; * = $p < .05$

3.6.2 Cox regression.

To further examine the ability of the risk measures to predict sexual and violent (including sexual) recidivism, Cox regression analyses were conducted (Table 3.11). Three series of analyses were performed, as follows. First, the predictive ability of the VRS-SO Dynamic scale pre- and post-treatment was examined controlling for static risk (i.e., Static-99R). For both sexual and violent recidivism, the VRS-SO Dynamic scale pre- and post-treatment demonstrated significant incremental predictive validity over the Static-99R. All were significant at the $p < .01$ level, except the VRS-SO Dynamic scale pre-treatment was significant at the $p < .05$ level. The results were somewhat better for violent, compared to sexual, recidivism, and also somewhat better for post-treatment compared to pre-treatment. Of note, the

Exp(B) values were very similar (with differences of 0.01) for the VRS-SO Dynamic scale (pre- and post-treatment) comparing sexual and violent recidivism. This indicates that the lower Wald statistics for sexual recidivism may be due to power limitations (given the smaller subsample of sexual, compared to violent, recidivists).

Second, the predictive ability of the STABLE 2007 pre- and post-treatment was examined controlling for static risk (i.e., Static-99R). For sexual recidivism, the STABLE 2007 pre-treatment did not demonstrate significant incremental predictive validity over the Static-99R (neither were predictive of sexual recidivism); however, the STABLE 2007 post-treatment did, and was significant at the $p < .05$ level. For violent recidivism, the STABLE 2007 pre- and post-treatment demonstrated significant incremental predictive validity at the $p < .01$ level, with post-treatment being a slightly better predictor than pre-treatment. As with the VRS-SO results described above, the greatest predictive validity was found for the post-treatment scores and for violent recidivism.

Third, and finally, the predictive ability of the VRS-SO Dynamic scale pre- and post-treatment was examined controlling for the STABLE 2007 pre- and post-treatment. For sexual recidivism pre- and post-treatment, and violent recidivism post-treatment, the VRS-SO Dynamic scale demonstrated significant incremental predictive validity over the corresponding STABLE 2007 total score. These results were comparable and significant at the $p < .05$ level. For violent recidivism pre-treatment, the STABLE 2007 was a significant predictor (at the $p < .05$ level), while the VRS-SO Dynamic was not. Taking together all of the Cox regression results, the dynamic measures (i.e., the VRS-SO Dynamic scale and STABLE 2007) uniquely contributed to the prediction of sexual and violent recidivism after controlling for the Static-99R. Moreover, the post-treatment measures had higher predictive validity coefficients for these outcomes than the pre-treatment measures. Finally, the VRS-SO uniquely predicted sexual and violent recidivism while controlling for the STABLE 2007. Pretreatment STABLE 2007 scores in turn uniquely predicted general volence after controlling for pre-treatment VRS-SO scores.

Table 3.11

Predictive Validity: Cox Regression Analyses for the Risk Measures and Sexual and Violent Recidivism

	Regression model	Sexual Recidivism						Violent Recidivism					
	(1-6)	B	SE	Wald	e^B	*p*	95% CI	B	SE	Wald	e^B	*p*	95% CI
1.	Static-99R	.01	.08	.02	1.01	.880	.87, 1.18	.12	.05	5.16	1.13	.023	1.02, 1.26
	VRS-SO Dyn (pre)	.08	.03	4.96	1.08	.026	1.01, 1.15	.07	.02	9.01	1.07	.003	1.02, 1.12
2.	Static-99R	.01	.08	.01	1.01	.922	.87, 1.17	.12	.05	5.18	1.13	.023	1.02, 1.25
	VRS-SO Dyn (post)	.08	.03	7.91	1.08	.005	1.02, 1.14	.08	.02	18.80	1.09	.000	1.05, 1.13
3.	Static-99R	.03	.08	.10	1.03	.757	.87, 1.20	.10	.06	3.22	1.11	.073	.99, 1.23
	STABLE 2007 (pre)	.06	.05	1.13	1.06	.289	.95, 1.17	.11	.04	8.85	1.11	.003	1.04, 1.19
4.	Static-99R	.01	.08	.02	1.01	.890	.87, 1.18	.11	.05	4.07	1.11	.044	1.00, 1.23
	STABLE 2007 (post)	.08	.04	3.77	1.08	.052	1.00, 1.17	.10	.03	12.52	1.10	.000	1.04, 1.16
5.	STABLE 2007 (pre)	-.03	.07	.19	.97	.660	.85, 1.11	.09	.04	3.85	1.09	.050	1.00, 1.19
	VRS-SO Dyn (pre)	.09	.05	4.09	1.10	.043	1.00, 1.20	.04	.03	2.32	1.04	.128	.99, 1.10
6.	STABLE 2007 (post)	-.02	.06	.15	.98	.697	.86, 1.10	.03	.04	.62	1.03	.430	.95, 1.12
	VRS-SO (post)	.09	.04	4.33	1.10	.037	1.01, 1.19	.07	.03	6.10	1.07	.014	1.02, 1.14

3.6.3 Survival analyses.

A series of survival analyses were performed, using the VRS-SO Total pre- and post-treatment and the STABLE 2007 pre- and post-treatment as the predictor variables, and time to sexual and violent (including sexual) recidivism (specifically reconviction) as the criterion variables. The VRS-SO Total scores were divided into risk bins consistent with the tool's specified risk categories: Low to Moderate-Low (scores from 0-30), Moderate-High (scores from 31-40), and High (scores from 41-72). The Low and Moderate-Low risk categories were combined due to the negligible number of offenders in the Low risk category. The STABLE 2007 scores were also divided into risk bins consistent with the tool's specified risk categories: Low (scores from 0-3), Moderate (scores from 4-11), and High (scores from 12-26). Offenders were organized according to these risk categories and survival curves were computed for each category for sexual and violent recidivism. These survival curves are illustrated in Figures 3.1 through 3.8. The survival curves were statistically compared to one another (using chi square, χ^2) to determine if the categories of offenders differed significantly in their survival rates.

Of note, the survival curves demonstrate a re-configuring from pre- to post-treatment, as the number of cases in each risk category changes. This is due to the fact that risk scores

decrease on average from pre- to post-treatment, thus some of the offenders in the High risk category move into the Moderate-High risk category, and some move from the Moderate-High risk category to the Low to Moderate-Low risk category. To illustrate, the number of cases in each of the risk categories for the VRS-SO Total pre-treatment is as follows: Low to Moderate-Low = 9, Moderate-High = 50, High = 121; for post-treatment: Low to Moderate-Low = 31, Moderate-High = 83, High = 66.

Figures 3.2 through 3.5 display the survival curves (i.e., the cumulative proportion of offenders surviving over the total follow-up period) for the VRS-SO Total, pre- and post-treatment, for sexual and violent recidivism. The survival curves for the VRS-SO Total pre- and post-treatment for sexual recidivism (Figures 3.1 and 3.2) were consistent with the anticipated recidivism trajectories; there are higher and faster failure rates (i.e., recidivism rates) with each successive increase in risk level. That is, offenders in the High risk category sexually recidivated more quickly and to a greater degree than offenders in the Moderate-High risk category, who in turn sexually recidivated more quickly and to a greater degree than offenders in the Low to Moderate-Low risk category. The only significant difference between these survival curves, however, was for the VRS-SO Total post-treatment, between the Low to Moderate-Low and High risk categories ($\chi^2 = 4.99$, $p < .05$).

Similar results were obtained for the survival analyses of the VRS-SO Total pre- and post-treatment and violent recidivism (Figures 3.3 and 3.4). Again, the curves were consistent with the anticipated recidivism trajectories. Regarding significant differences between the curves, for the VRS-SO Total pre-treatment, the Moderate-High risk category was significantly different from the High risk category (i.e., high risk offenders violently recidivated significantly faster and to a greater degree than moderate-high risk offenders; $\chi^2 = 8.88$, $p < .01$). For the VRS-SO Total post-treatment, the Low to Moderate-Low risk category was significantly different from the Moderate-High risk category ($\chi^2 = 10.33$, $p < .01$) and the High risk category ($\chi^2 = 15.98$, $p < .01$); that is, both moderate-high and high risk offenders violently recidivated significantly faster and to a greater degree than low to moderate-low risk offenders.

Figures 3.6 through 3.9 display the survival curves for the STABLE 2007, pre- and post-treatment, for sexual and violent recidivism. There were no STABLE 2007 pre-treatment scores in the Low risk category and there were only 2 post-treatment scores in the category. However, the STABLE 2007 demonstrated a similar re-configuring to the VRS-SO as the number of High

risk offenders changed from 149 to 89 pre- to post-treatment, and the number of Moderate risk offenders changed from 31 to 89. For sexual recidivism (Figures 3.5 and 3.6), while the curves generally followed the anticipated trajectories, there were no significant differences between the risk categories. For violent recidivism (Figures 3.7 and 3.8), however, the pre-treatment curves were significantly different, as expected, with the High risk offenders demonstrating higher and faster rates of violent recidivism than the Moderate risk offenders ($\chi^2 = 6.47$, $p < .01$). The same result was also found in the post-treatment condition ($\chi^2 = 8.71$, $p < .01$).

Figure 3.2

Survival Analysis: Cumulative Proportion of Offenders Sexually Recidivating by VRS-SO Pre-Treatment Risk Bins (Low to Moderate-Low, Moderate-High, High).

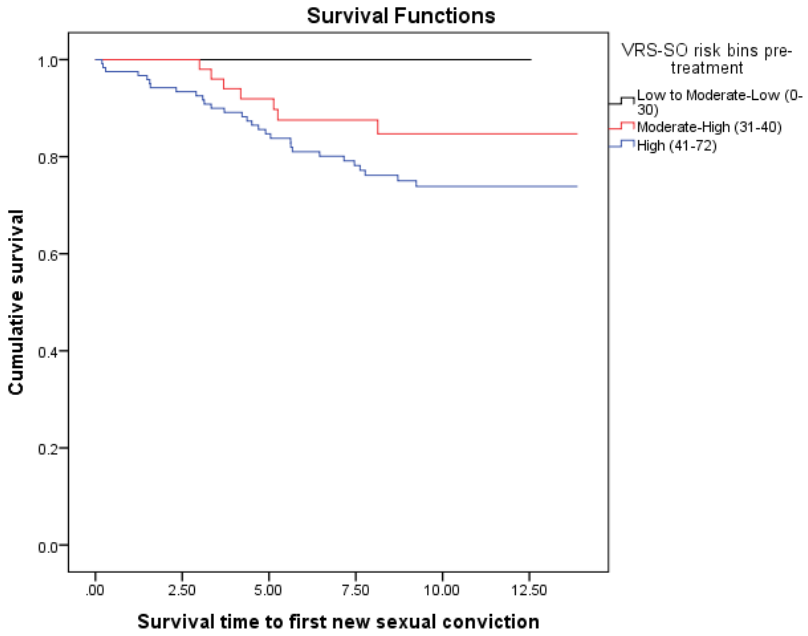


Figure 3.3

Survival Analysis: Cumulative Proportion of Offenders Sexually Recidivating by VRS-SO Post-Treatment Risk Bins (Low to Moderate-Low, Moderate-High, High).

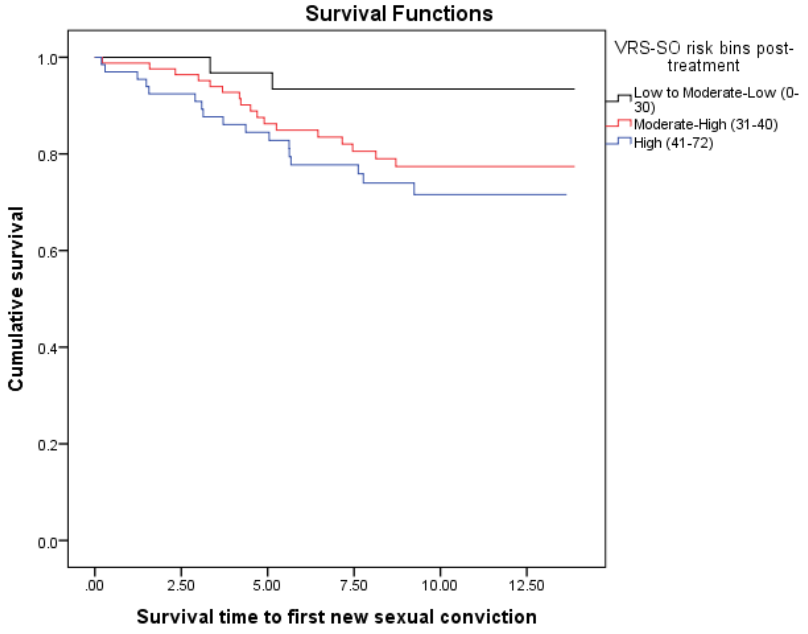


Figure 3.4

Survival Analysis: Cumulative Proportion of Offenders Violently Recidivating by VRS-SO Pre-Treatment Risk Bins (Low to Moderate-Low, Moderate-High, High).

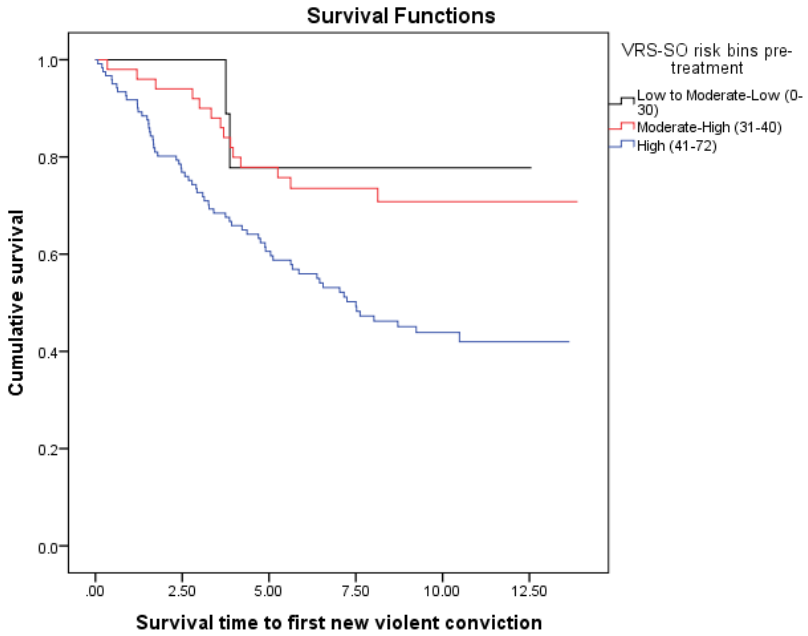


Figure 3.5

Survival Analysis: Cumulative Proportion of Offenders Violently Recidivating by VRS-SO Post-Treatment Risk Bins (Low to Moderate-Low, Moderate-High, High).

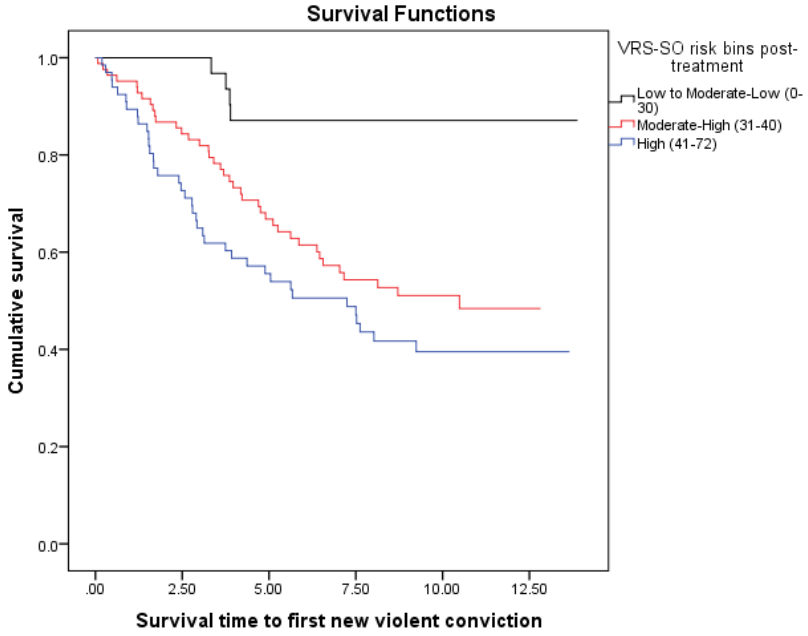


Figure 3.6

Survival Analysis: Cumulative Proportion of Offenders Sexually Recidivating by STABLE 2007 Pre-Treatment Risk Bins (Moderate, High).

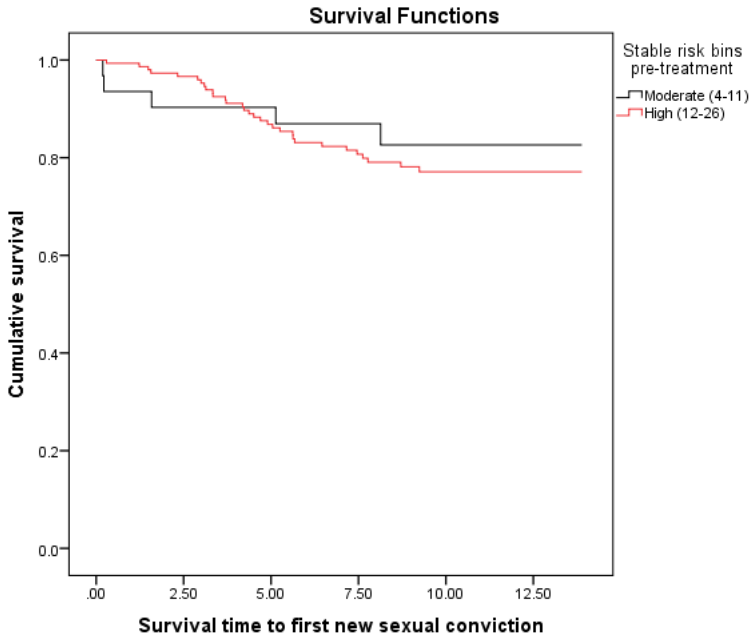


Figure 3.7

Survival Analysis: Cumulative Proportion of Offenders Sexually Recidivating by STABLE 2007 Post-Treatment Risk Bins (Low, Moderate, High).

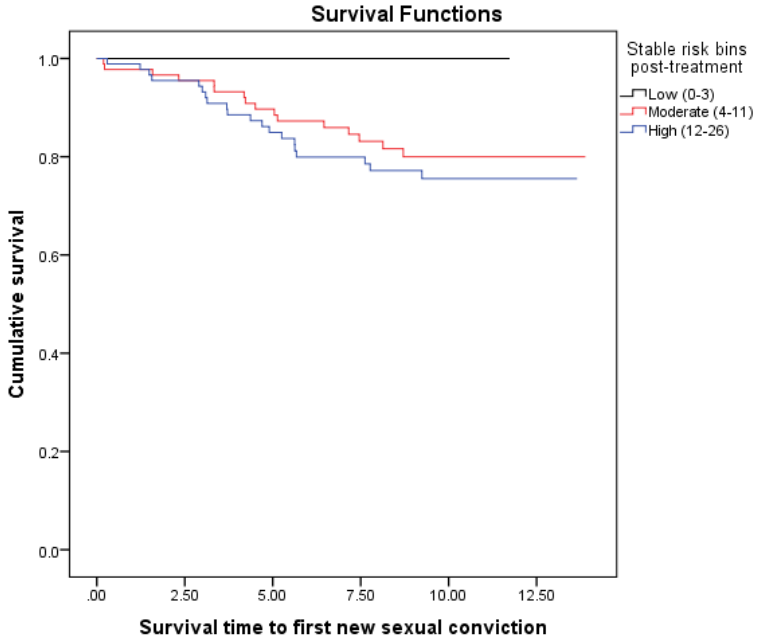


Figure 3.8

Survival Analysis: Cumulative Proportion of Offenders Violently Recidivating by STABLE 2007 Pre-Treatment Risk Bins (Moderate, High).

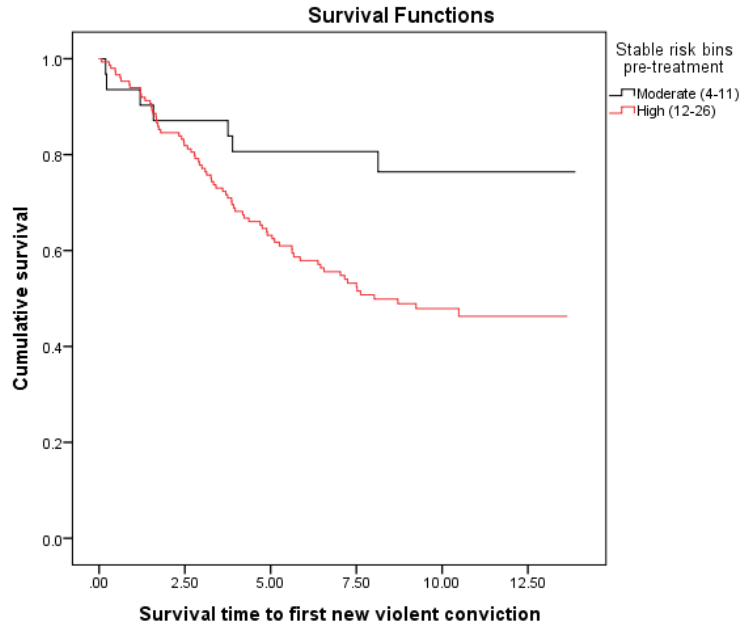
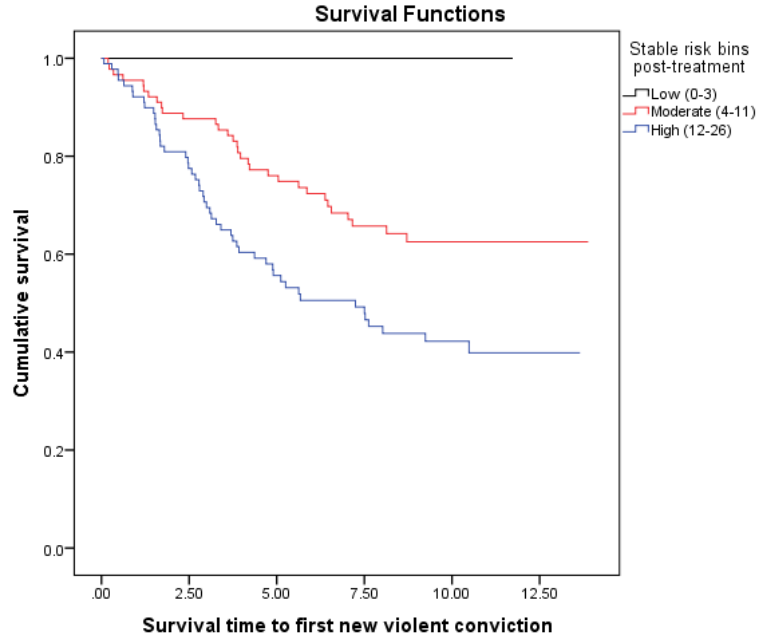


Figure 3.9

Survival Analysis: Cumulative Proportion of Offenders Violently Recidivating by STABLE 2007 Post-Treatment Risk Bins (Low, Moderate, High).



3.7 Section 2: Convergent Validity of Change Measures

Change on the VRS-SO Dynamic scale and factors (i.e., Sexual Deviance, Criminality, and Treatment Responsivity), STABLE 2007, and the TRGG:SV Treatment Readiness and Responsivity scales, as well as the TRRG:SV Gain scale (which is intended to capture overall pre- to post-treatment gain, akin to change), was correlated to assess the convergence of the change measures in capturing change (see Table 3.12). All of the correlations were positive and significant at the $p < .01$ level, ranging from $r = .35$ to $r = .83$.

Change on the VRS-SO Dynamic scale was also correlated with the TRRG:SV scales (total scores) to assess convergence; for instance, whether pre- and post-treatment levels of Treatment Readiness and Responsivity were related to change as measured by the VRS-SO, and whether Treatment Gain was related to change on the VRS-SO. Simultaneously, the TRRG:SV scales were correlated with each other to assess their convergence. The results are illustrated in Table 3.13. The majority of the results are significant at the $p < .01$ level. The correlations between change on the VRS-SO and the pre-treatment Treatment Readiness and Responsivity scores, however, are significant at the $p < .05$ level. This suggests that post-treatment Treatment Readiness and Responsivity scores are more highly indicative of change on the VRS-SO than pre-treatment Treatment Readiness and Responsivity scores.

Table 3.12

Convergent Validity: Correlations among the Change Measures

	VRS-SO Dynamic	VRS-SO Sexual Deviance	VRS-SO Criminality	VRS-SO Tx Responsivity	STABLE 2007
VRS-SO Dynamic		.79**	.74**	.83**	.68**
VRS-SO Sexual Deviance			.35**	.47**	.46**
VRS-SO Criminality				.55**	.57**
VRS-SO Tx Responsivity					.59**
TRRG:SV Tx Readiness	.72**	.44**	.58**	.70**	.72**
TRRG:SV Tx Responsivity	.69**	.39**	.59**	.69**	.75**
TRRG:SV Tx Gain	.67**	.51**	.49**	.57**	.70**

Note: Tx = Treatment; ** = $p < .01$

Table 3.13

Convergent Validity: Correlations between Change on the VRS-SO Dynamic Scale and the TRRG:SV Total Scores

	TRRG:SV Tx Readiness (pre)	TRRG:SV Tx Readiness (post)	TRRG:SV Tx Responsivity (pre)	TRRG:SV Tx Responsivity (post)	TRRG:SV Tx Gain
VRS-SO Dynamic (change)	.18*	.64**	.23*	.64**	.67**
TRRG:SV Tx Readiness (pre)		.70**	.88**	.64**	.53**
TRRG:SV Tx Readiness (post)			.70**	.95**	.89**
TRRG:SV Tx Responsivity (pre)				.72**	.58**
TRRG:SV Tx Responsivity (post)					.90**

Note: Tx = Treatment; ** = $p < .01$; * = $p < .05$

3.8 Section 2: Predictive Validity of Change Measures

As determined in Section1, the risk assessment measures and clinical rating scales were, in general, predictive of recidivism, specifically sexual, violent (including sexual), and any reconviction. Section 2 sought to examine the predictive validity of the change measures (i.e., pre- to post-treatment change on the VRS-SO Dynamic scale, VRS-SO factors, STABLE 2007, and TRRG:SV Treatment Readiness and Treatment Responsivity scales). The average amount of change on the measures was as follows: VRS-SO Dynamic scale = -4.2; VRS-SO factors = from -1.2 to -1.3; STABLE 2007 = -2.9; TRRG:SV Treatment Readiness = 4.1; and TRRG:SV Treatment Responsivity = 4.6. Figures 3.10 and 3.11 illustrate the VRS-SO Dynamic scale pre- to post-treatment change. They demonstrate that, on average, VRS-SO Dynamic scale total scores decreased from 31.2 (*SD* = 5.4) pre-treatment to 27.0 (*SD* = 6.1) post-treatment. Of note, these figures do not include VRS-SO Static scale scores (which do not readily change), therefore they do not represent overall risk level.

Figure 3.10

Frequency Distribution: VRS-SO Dynamic Scale Total Scores Pre-Treatment

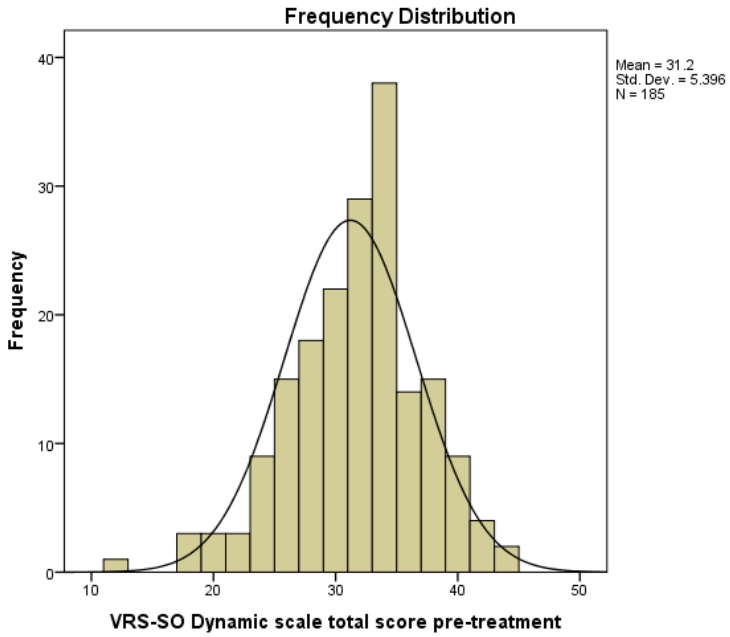
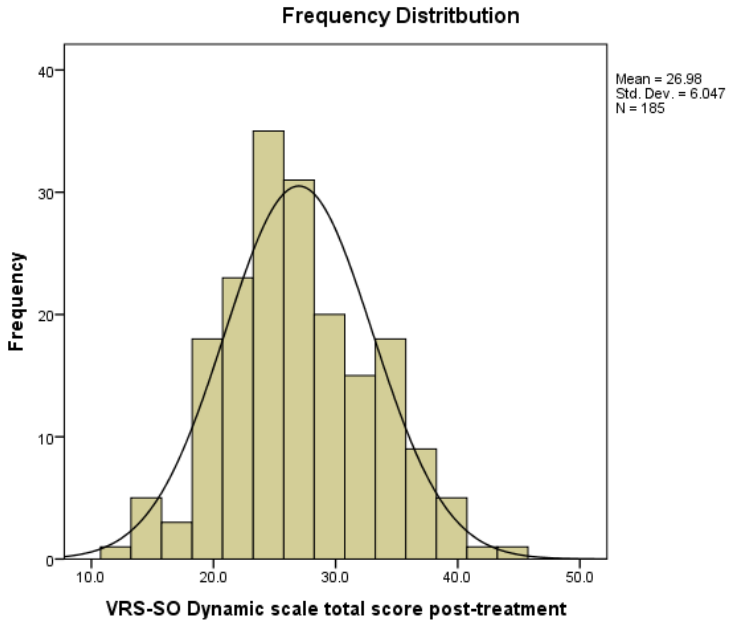


Figure 3.11

Frequency Distribution: VRS-SO Dynamic Scale Total Scores Post-Treatment



3.8.1 Correlations and area under the curve.

The predictive validity of the change measures was examined using point biserial correlation coefficients (i.e., r_{pb}) and area the curve (AUC) values; again, the outcomes included sexual, violent (including sexual), and any recidivism, specifically reconviction (see Table 3.14). As expected, the correlations were in the negative direction, indicating that the greater the change, the lower the recidivism. For sexual recidivism, change on the TRRG:SV Treatment Readiness and Responsivity scales demonstrated significant predictive validity (r_{pb} = -.15 and = -.16 respectively, $p < .05$). For violent recidivism, all of the measures of change demonstrated significant predictive validity, except for the VRS-SO Criminality factor and the STABLE 2007. The VRS-SO Dynamic scale and Sexual Deviance and Treatment Responsivity factors were significant at the $p < .05$ level (r_{pb} = -.17, -.19, -.15 respectively), while the TRRG:SV Treatment Readiness and Responsivity scales were significant at the $p < .01$ level (r_{pb} = -.21 and -.20 respectively). For any recidivism, only the change on the VRS-SO Sexual Deviance factor was significantly predictive (r_{pb} = -.16, $p < .05$).

Table 3.14

Predictive Validity: Correlations and AUCs between the Change Measures and Outcome

Measure	Sexual Recidivism			Violent Recidivism			Any Recidivism		
	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI	r_{pb}	AUC	95% CI
VRS-SO Dynamic	-.10	.56	.45, .68	-.17*	.59*	.50, .67	-.07	.54	.46, .63
VRS-SO Sexual Deviance	-.11	.60	.50, .71	-.19*	.62**	.53, .70	-.16*	.59*	.50, .67
VRS-SO Criminality	-.05	.54	.43, .66	-.04	.52	.43, .60	.13	.42	.34, .51
VRS-SO Tx Responsivity	-.07	.54	.42, .66	-.15*	.58	.49, .66	-.08	.54	.45, .62
STABLE 2007	-.09	.58	.46, .68	-.09	.54	.45, .62	-.02	.50	.41, .59
TRRG:SV Tx Readiness	-.15*	.60	.48, .71	-.21**	.62**	.54, .70	-.11	.56	.48, .65
TRRG:SV Tx Responsivity	-.16*	.60	.48, .72	-.20**	.61*	.52, .69	-.11	.55	.47, .64

Note: Tx = Treatment; ** = $p < .01$; * = $p < .05$

3.8.2. Partial correlations.

Partial correlations were computed to examine the predictive validity of the measures of change while controlling for risk, specifically the Static-99R; that is, risk level was partialled out, or removed, permitting an examination of the unique relationship between change and outcome (see Table 3.15). The partial correlations demonstrated little difference from the zero-order correlations. In partialling out the Static-99R, the TRRG:SV Treatment Readiness scale was no longer significant for sexual recidivism, although the correlation only changed from r = -.15 (zero-order) to r = -.14 (partial). Also, the VRS-SO Sexual Deviance factor was no longer significant for any recidivism, with the correlation changing from r = -.16 (zero-order) to r = -.13 (partial). Some of the partial correlations were higher than the zero-order correlations, but these were marginal and not significant. Overall, the differences were negligible, meaning that static risk level did not significantly influence the relationship between change and outcome.

Table 3.15

Predictive Validity: Partial Correlations between the Change Measures and Outcome

	Sexual Recidivism	Violent Recidivism	Any Recidivism
Measure	*pr*	*pr*	*pr*
VRS-SO Dynamic	-.10	-.17*	-.08
VRS-SO Sexual Deviance	-.11	-.17*	-.13
VRS-SO Criminality	-.06	-.06	.10
VRS-SO Tx Responsivity	-.07	-.15*	-.08
STABLE 2007	-.10	-.10	-.03
TRRG:SV Tx Readiness	-.14	-.20**	-.09
TRRG:SV Tx Responsivity	-.16*	-.20**	-.10

Note: Tx = Treatment; ** = $p < .01$; * = $p < .05$

3.8.3 Correlations between pre-treatment risk and change.

Previous studies (e.g., Beggs & Grace, 2011; Olver et al., 2013) have indicated that change scores are constrained by pre-treatment scores, with higher risk offenders having more room to change, and thus typically obtaining higher change scores, than lower risk offenders. To examine this finding in the present sample, change scores were correlated with their respective pre-treatment scores. That is, the VRS-SO Total pre-treatment was correlated with change on the VRS-SO Dynamic scale and Sexual Deviance, Criminality, and Treatment Responsivity factors; the STABLE 2007 total pre-treatment was correlated with STABLE 2007 change; the

TRRG:SV Treatment Readiness total pre-treatment was correlated with Treatment Readiness change; and the TRRG:SV Treatment Responsivity total pre-treatment was correlated with Treatment Responsivity change. The results are demonstrated in Table 3.16. All of the significant correlations were positive, as expected, indicating that the greater the pre-treatment score, the greater the amount of change. The VRS-SO Total pre-treatment was significantly correlated with change on the VRS-SO Dynamic scale and Treatment Responsivity factor, and correlated at $p < .06$ with change on the Criminality factor. The STABLE 2007 total pre-treatment was significantly correlated with STABLE 2007 change. The TRRG:SV pre-treatment scores were not correlated with the change scores. These results are consistent with findings from previous studies and suggest that the relationship between change and recidivism is confounded by pre-treatment risk level.

Table 3.16

Correlations between Change Scores and Respective Pre-Treatment Scores

Measure	*r*
VRS-SO Dynamic	.15*
VRS-SO Sexual Deviance	.10
VRS-SO Criminality	.14†
VRS-SO Tx Responsivity	.17*
STABLE 2007	.16*
TRRG:SV Tx Readiness	-.04
TRRG:SV Tx Responsivity	.01

Note: Tx = Treatment; * $p < .05$; † $p < .06$

3.8.4 Semi-partial correlations.

Given the finding that pre-treatment risk was correlated with change, thus confounding the relationship between change and recidivism, semi-partial correlations were calculated. In this manner, the relationship between change and recidivism, controlling for pre-treatment risk level, was examined. The results are presented in Table 3.17. The zero order correlations are presented alongside the semi-partial correlations for comparison purposes. Overall, controlling for pre-treatment risk slightly increased the predictive validity of the change measures for the VRS-SO and STABLE 2007 for all forms of recidivism. For the TRRG:SV measures, partialling-out pre-treatment scores did not impact the relationship between Treatment Readiness change and

recidivism, but did have a slight negative impact on the predictive validity of Treatment Responsivity change.

Table 3.17

Predictive Validity: Semi-Partial Correlations between the Change Scores and Outcome

	Sexual Recidivism		Violent Recidivism		Any Recidivism	
Measure	r_{pb}	Semi-partial *r*	r_{pb}	Semi-partial *r*	r_{pb}	Semi-partial *r*
VRS-SO Dynamic	-.10	-.12	-.17*	-.19**	-.07	-.11
VRS-SO Sexual Deviance	-.11	-.13	-.19*	-.20**	-.16*	-.17*
VRS-SO Criminality	-.05	-.07	-.04	-.06	.13	-.10
VRS-SO Tx Responsivity	-.07	-.09	-.15*	-.18*	-.08	-.12
STABLE 2007	-.09	-.11	-.09	-.13	-.02	-.05
TRRG:SV Tx Readiness	-.15*	-.15*	-.21**	-.21**	-.11	-.11
TRRG:SV Tx Responsivity	-.16*	-.16*	-.20**	-.19*	-.11	-.10

Note: Tx = Treatment; * $p < .05$, ** $p < .01$

3.8.5 Cox regression.

To further examine the ability of the measures of change to predict sexual and violent (including sexual) recidivism, while controlling for risk, four series of cox regression analyses were performed (Tables 3.18 and 3.18). For all of the Cox regression results, the Exp(B) values (or e^{B}) were in the expected directions; that is, they were over 1.00 for the risk measures (i.e., the greater the level of risk, the greater the recidivism), and they were under 1.00 for the change measures (i.e., the greater the amount of change, the lower the recidivism). The first series of analyses examined the predictive validity of pre- to post-treatment change on the VRS-SO Dynamic scale, controlling for static and dynamic risk. In the first analysis, static risk was captured by the Static-99R. In the second analysis, it was captured by the VRS-SO Static scale. For both sets of analyses, the static measure was entered first, followed by the dynamic measure (the VRS-SO Dynamic scale pre-treatment), and finally the change measure (pre- to post-treatment change on the VRS-SO Dynamic scale). In comparing these two sets of analyses, there were no significant differences, except that, after the first step, the Static-99R predicted violent recidivism, whereas the VRS-SO Static scale did not (which was demonstrated by previous analyses in Section 1). Pre- to post-treatment change on the VRS-SO Dynamic scale, controlling for static and dynamic risk, was significantly predictive of violent recidivism at the *p*

< .01 level. Change was not significantly predictive, however, of sexual recidivism. This may have been due to, in part, to a base rate and power issue (n=36 for sexual recidivism, or 20% of the sample, and n=81 for violent including sexual recidivism, or 45% of the sample). The results for sexual recidivism may have been significant if the sample of sexual recidivists had been slightly larger. Nevertheless, in comparing the Exp(B) values (e^B = .90 for violent recidivism and e^B = .92 for sexual recidivism), change is more strongly related to reductions in any and all violence in contrast to sexual violence per se.

As there were no significant differences in the first series of analyses between using the Static-99R or the VRS-SO Static scale (in terms of the predictive validity of the change measure), the VRS-SO Total (Static and Dynamic scales combined) pre-treatment was used as the measure of risk for the following series of Cox regression analyses. In the first analysis, the VRS-SO Total pre-treatment was entered, followed by the VRS-SO Dynamic scale change. The same pattern of results was found, as described above; that is, change significantly predicted violent (including sexual), but not sexual, recidivism, at the $p < .01$ level. This same pattern was also demonstrated for the VRS-SO Factors 1 (Sexual Deviance) and 3 (Treatment Responsivity) change scores. Despite these change measures not demonstrating significant predictive validity in terms of sexual recidivism, the Exp(B) values were in the anticipated direction (Dynamic change e^B = .91, Factor 1 change e^B = .80, and Factor 3 change e^B = .82). The VRS-SO Factor 2 (Criminality) change score did not significantly predict sexual or violent recidivism, although the Exp(B) values were in the anticipated direction (e^B = .87 for sexual recidivism and e^B = .90 for violent recidivism).

The final two series of Cox regression analyses examined the predictive validity of pre- to post-treatment change on the STABLE 2007 and the TRRG:SV Treatment Readiness and Responsivity scales, as well as the TRRG:SV Treatment Gain scale (which is akin to change). For the STABLE 2007 analyses, risk was captured by the Static-99R and the STABLE 2007 pre-treatment (again controlling for both static and dynamic risk). STABLE 2007 change did not significantly predict sexual or violent recidivism. For the TRRG:SV analyses, risk was captured by the VRS-SO Total pre-treatment. Both TRRG:SV Treatment Readiness change and Treatment Responsivity change significantly predicted sexual recidivism (at the $p < .05$ level) and violent, including sexual, recidivism (at the $p < .01$ level); the Exp(B) values were similar,

ranging from e^B = .90 to .91. The TRRG:SV Treatment Gain significantly predicted violent, including sexual, recidivism (at the $p < .01$ level), but not sexual recidivism.

Table 3.18

Predictive Validity: Cox Regression Analyses for the VRS-SO Change Measures and Sexual and Violent Recidivism

Regression model	Sexual Recidivism						Violent Recidivism					
(1-6)	B	SE	Wald	e^B	*p*	95% CI	B	SE	Wald	e^B	*p*	95% CI
1. Static-99R	.01	.08	.01	1.01	.907	.87, 1.18	.12	.05	5.72	1.13	.017	1.02, 1.25
VRS-SO Dyn (pre)	.07	.03	4.94	1.08	.026	1.01, 1.15	.07	.02	10.68	1.07	.001	1.03, 1.12
VRS-SO Dyn chng	-.08	.05	2.51	.92	.113	.83, 1.02	-.11	.04	9.13	.90	.003	.84, .96
2. VRS-SO Static	.01	.05	.01	1.01	.908	.91, 1.11	.03	.03	.92	1.03	.336	.97, 1.10
VRS-SO Dyn (pre)	.07	.03	5.17	1.08	.023	1.01, 1.15	.08	.02	13.06	1.08	.000	1.04, 1.13
VRS-SO Dyn chng	-.09	.05	2.54	.92	.111	.83, 1.02	-.11	.04	9.40	.90	.002	.84, .96
3. VRS-SO Total (pre)	.06	.03	4.81	1.06	.028	1.01, 1.11	.06	.02	13.80	1.06	.000	1.03, 1.10
VRS-SO Dyn chng	-.09	.05	2.85	.91	.092	.82, 1.02	-.11	.04	9.68	.90	.002	.84, .96
4. VRS-SO Total (pre)	.06	.03	4.83	1.06	.028	1.01, 1.11	.06	.02	12.99	1.06	.000	1.03, 1.10
VRS-SO F1 chng	-.22	.13	3.12	.80	.078	.62, 1.03	-.25	.08	9.88	.78	.002	.67, .91
5. VRS-SO Total (pre)	.06	.03	4.85	1.06	.028	1.01, 1.11	.06	.02	11.92	1.06	.001	1.03, 1.10
VRS-SO F2 chng	-.14	.14	.98	.87	.322	.66, 1.15	-.11	.10	1.20	.90	.274	.75, 1.09
6. VRS-SO Total (pre)	.06	.03	5.01	1.06	.025	1.01, 1.11	.06	.02	14.13	1.06	.000	1.03, 1.10
VRS-SO F3 chng	-.20	.14	1.92	.82	.166	.62, 1.09	-.29	.09	9.80	.75	.002	.62, .90

Note: Dyn = Dynamic; e^B = Exp(B); chng = change; F1 = Factor 1 (Sexual Deviance); F2 = Factor 2 (Criminality); F3 = Factor 3 (Treatment Responsivity)

Table 3.19

Predictive Validity: Cox Regression Analyses for the STABLE 2007 and TRRG:SV Change Measures and Sexual and Violent Recidivism

Regression model (1-4)		Sexual Recidivism						Violent Recidivism					
		B	SE	Wald	e^B	*p*	95% CI	B	SE	Wald	e^B	*p*	95% CI
1.	Static-99R	.02	.08	.09	1.02	.768	.88, 1.20	.10	.05	3.49	1.11	.062	1.00, 1.23
	STABLE 2007 (pre)	.06	.05	1.54	1.07	.215	.96, 1.18	.11	.04	9.87	1.12	.002	1.04, 1.19
	STABLE 2007 chng	-.11	.07	2.61	.90	.106	.79, 1.02	-.08	.04	3.49	.93	.062	.85, 1.00
2.	VRS-SO Total (pre)	.05	.03	4.13	1.05	.042	1.00, 1.10	.06	.02	12.47	1.06	.000	1.03, 1.10
	TRRG:SV Read chng	-.10	.04	4.83	.91	.028	.84, .99	-.10	.03	12.89	.90	.000	.85, .96
3.	VRS-SO Total (pre)	.05	.03	4.73	1.06	.030	1.01, 1.11	.06	.02	12.83	1.06	.000	1.03, 1.10
	TRRG:SV Resp chng	-.11	.04	6.20	.90	.013	.82, .98	-.09	.03	11.38	.91	.001	.86, .96
4.	VRS-SO Total (pre)	.04	.03	1.95	1.04	.163	.99, 1.09	.04	.02	5.22	1.04	.022	1.01, 1.08
	TRRG:SV Gain	-.07	.03	4.09	.94	.043	.88, 1.00	-.09	.02	15.33	.92	.000	.88, .96

Note: e^B = Exp(B); chng = change; Read = Treatment Readiness; Resp = Treatment Responsivity; Gain = Treatment Gain

3.8.6 Survival analyses.

Survival analyses were performed to examine the interaction of risk and change on recidivism (Figures 3.14 to 3.17). Static-99R total scores and pre- to post-treatment change on the VRS-SO Dynamic scale were the predictor variables (to capture level of risk and amount of change, respectively), and time to sexual and violent (including sexual) recidivism (specifically reconviction) were the criterion variables. For these analyses, "low risk" was defined as Static-99R scores ranging from -3 to 3 (capturing low and low-moderate risk categories) and "high risk" was defined as Static-99R scores ranging from 4 to 12 (capturing moderate-high and high risk categories). "High change" was defined as any amount of change on the VRS-SO Dynamic scale falling above the mean (i.e., above 4.2) and "low change" was defined as any amount falling below the mean (i.e., below 4.2). Offenders were organized into the following groups: 1) low risk – high change, 2) low risk – low change 3) high risk – high change, and 4) high risk –

low change. Survival curves were computed for each group and statistically compared to one another (using chi square, χ^2). It was anticipated that offenders in the "high change" groups would recidivate less than offenders in the "low change" groups, and that this difference would be more prominent among "high risk" compared to "low risk" offenders, given that higher risk offenders are able to demonstrate greater amounts of change and correspondingly decrease their risk for recidivism to a greater degree. See Figures 3.12 and 3.13 for the rates of sexual and violent recidivism, respectively, according to these risk-change groupings.

For sexual recidivism (Figure 3.14), none of the groups of offenders significantly differed in their survival rates. The number of events (i.e., sexual recidivists) in each group, however, was limited; the low risk groups comprised 2 and 3 events, and the high risk groups comprised 14 and 17 events (for a total of 36 sexual recidivists). While not significant, the results were in the anticipated directions, as described above. For violent recidivism (Figure 3.15), there were three significant comparisons (i.e., significant differences in survival time to first new violent conviction). 1) The low risk – low change survival curve was significantly different from the high risk – low change curve ($\chi^2 = 11.42$, $p < .01$); 2) the low risk – high change curve was significantly different from the high risk – low change curve ($\chi^2 = 11.12$, $p < .01$); and 3) the high risk – low change curve was significantly different from the high risk – high change curve ($\chi^2 = 11.18$, $p < .01$). These results were also as anticipated; that is, high risk offenders who made high change recidivated significantly less than high risk offenders who made low change, but low risk offenders did not significantly differ in their recidivism trajectories according to amount of change made. Further, the low risk groups (regardless of amount of change made) had significantly different survival rates (i.e., recidivated significantly less) than the high risk – low change group. The low risk groups did not significantly differ from the high risk – high change group. The high risk – low change group did significantly differ from the high risk – high change group. These findings indicate that the high risk – high change group was more similar, in terms of recidivism trajectory, to the low risk groups than to the high risk – low change group.

Additional survival analyses were performed to examine recidivism trajectories based solely on the amount of change made from pre- to post-treatment. Amount of change was again captured using the VRS-SO Dynamic scale and "low change" and "high change" were defined the same as for the previous survival analyses (i.e., below and above the mean, respectively).

For sexual recidivism (Figure 3.16), the trajectories, or survival curves, of the low change and high change groups were not significantly different. For violent recidivism (Figure 3.17), however, the trajectories were significantly different ($\chi^2 = 7.71$, $p < .01$); offenders in the high change group recidivated significantly less, on average, than offenders in the low change group.

Figure 3.12

Rates of Sexual Recidivism as a Function of Change and Risk Level

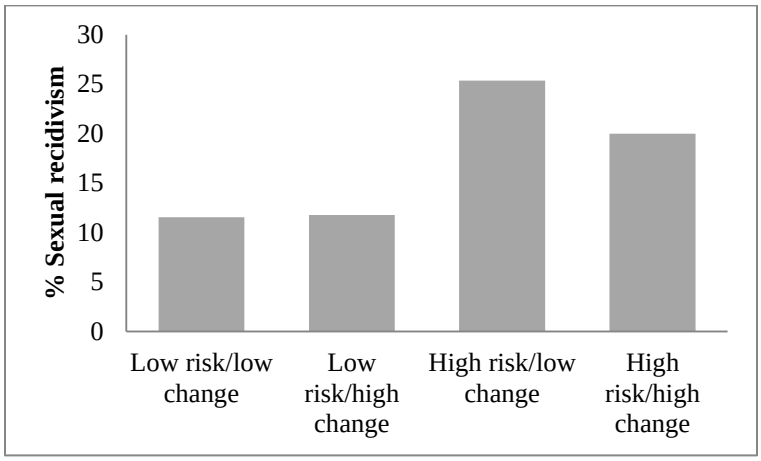


Figure 3.13

Rates of Violent Recidivism as a Function of Change and Risk Level

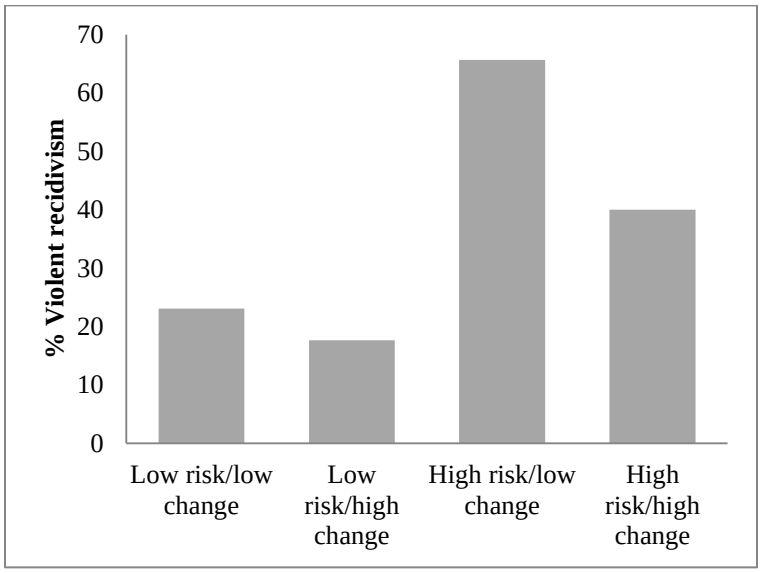


Figure 3.14

Survival Analysis: Cumulative Proportion of Offenders Sexually Recidivating by Static-99R Risk Level (Low, High) and VRS-SO Change (Low, High)

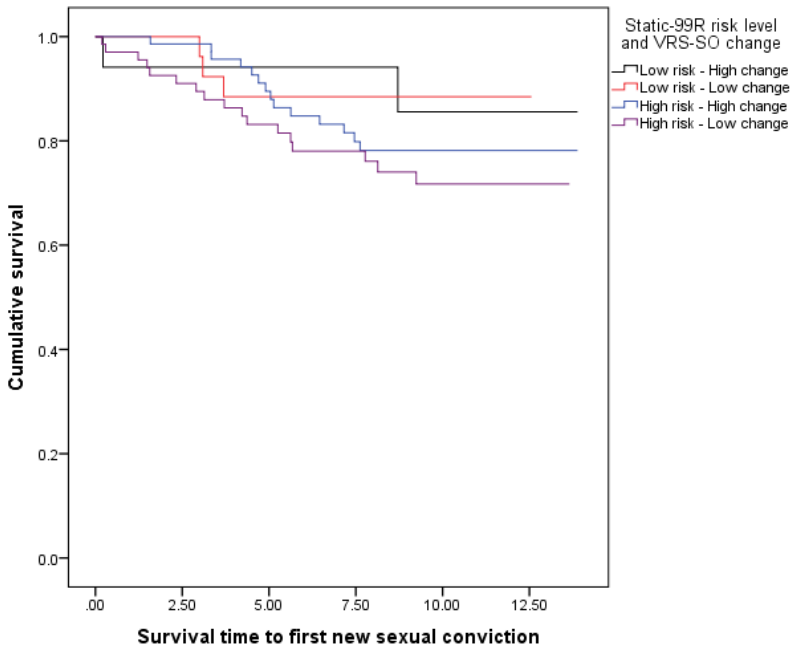


Figure 3.15

Survival Analysis: Cumulative Proportion of Offenders Violently Recidivating by Static-99R Risk Level (Low, High) and VRS-SO Change (Low, High)

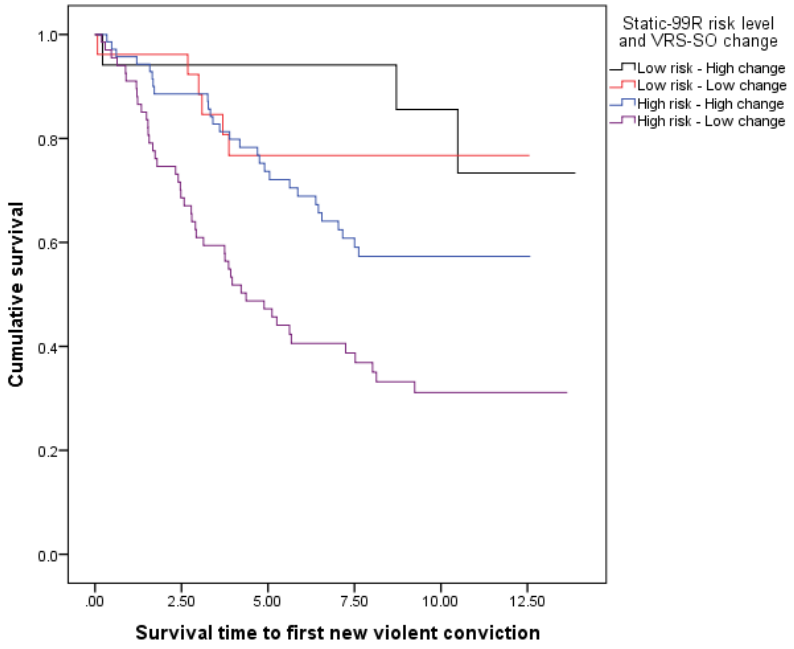


Figure 3.16

Survival Analysis: Cumulative Proportion of Offenders Sexually Recidivating by VRS-SO Change (Low, High)

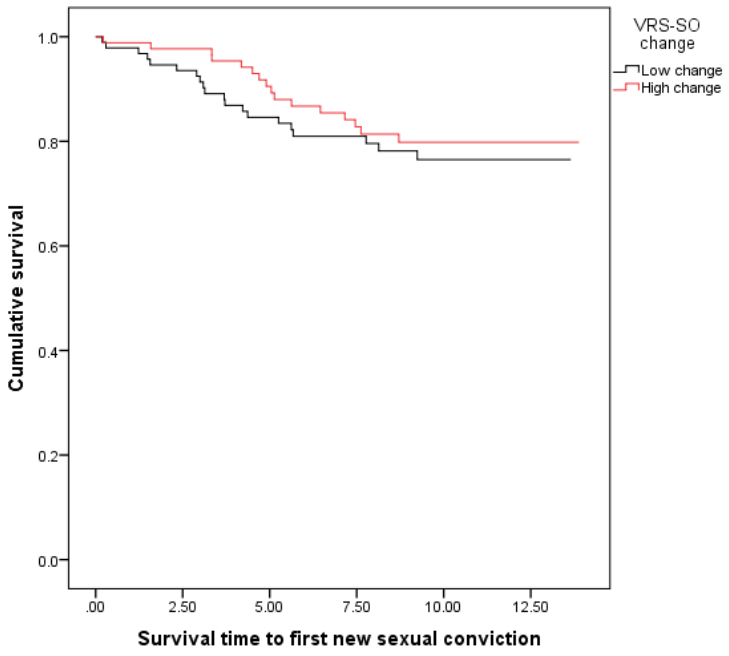
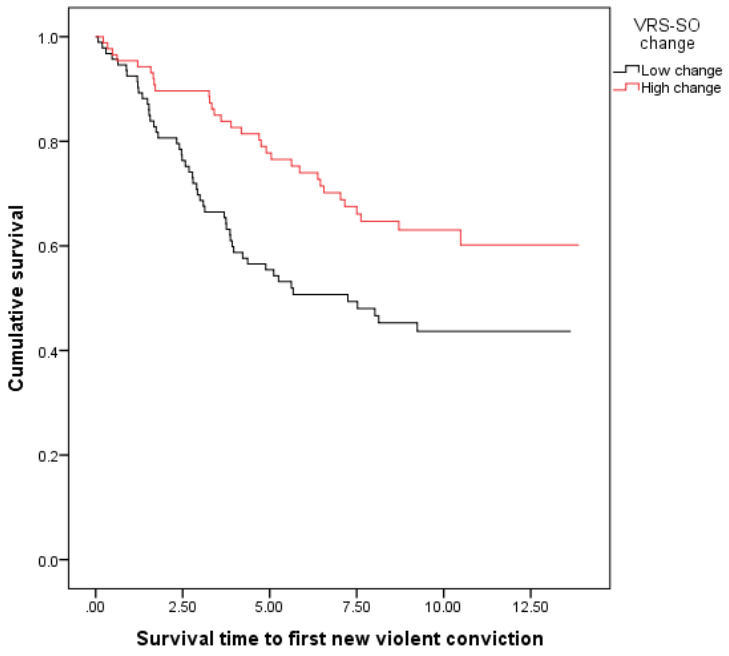


Figure 3.17

Survival Analysis: Cumulative Proportion of Offenders Violently Recidivating by VRS-SO Change (Low, High)



3.9 Section 3: Treatment Attrition

3.9.1 Comparisons between successful and unsuccessful program completers.

For the purpose of the following analyses, program status was coded in a binary manner, as either Successfully Completed the program (i.e., Completers) or Did Not Successfully Complete the program (i.e., Non-completers). Two-thirds (74%) of the sample Successfully Completed the program. Of the 26% who Did Not Successfully Complete the program, half Unsuccessfully Completed the program, and half were Discharged. As illustrated in Table 3.20, program Completers and Non-completers were compared on a number of key variables using chi-square analyses (i.e., χ^2) for categorical variables and independent-samples t-tests (i.e., t) for continuous variables. Relationships between these key variables and program status (i.e., successful or unsuccessful program completion) were also examined. Point-biserial correlations (i.e., r_{pb}) were calculated between continuous variables and binary program status and phi correlations (i.e., φ) were calculated between categorical variables and binary program status. Positive correlations indicate an association with successful program completion, while negative correlations indicate an association with unsuccessful program completion.

Key variables were examined within the following categories: demographics, mental health, criminal history, pre-treatment risk measures, institutional behavior, and program-related. Among the demographic variables, treatment Completers and Non-completers did not significantly differ on any of the variables, including ethnicity (Aboriginal descent), employment history (predominantly unemployed), age at program admission, education, impaired cognitive abilities, learning difficulties, and reading abilities. Treatment Non-completers were more likely to be single/never married than Completers, and this difference trended toward significance. None of the mental health variables examined differentiated between Completers and Non-completers, including diagnosis of major mental illness, paraphilia, substance use disorder, any personality disorder, and antisocial personality disorder or traits.

Among the criminal history variables, the two groups did not significantly differ on sex offender type (rapist) or number of prior sexual offenses. Treatment Non-Completers had significantly more prior non-sexual violent and non-sexual non-violent offenses than Completers. Non-Completers also had more prior sentencing dates, trending toward significance. A number of the pre-treatment risk measures significantly differentiated between the groups, as follows: Non-completers had significantly higher ($p < .05$) risk scores on the VRS-

SO Dynamic scale, Total score, and Criminality factor, as well as on the STABLE 2007 total. Non-completers also had significantly higher ($p < .01$) scores on the VRS-SO Treatment Responsivity factor and significantly lower scores ($p < .01$) on the TRRG:SV Treatment Readiness and Treatment Responsivity scales. Treatment Non-Completers were significantly more likely to exhibit major institutional problems, including significantly more major and violent incidents.

Regarding the program-related variables, Non-completers scored significantly more poorly than Completers on pre-treatment measures of cognitive distortions, insight, treatment compliance, and denial. Treatment Completers spent significantly more time in treatment and demonstrated significantly more change on all of the change measures, including the VRS-SO Dynamic scale, Sexual Deviance, Criminality, and Treatment Responsivity factors, the STABLE 2007, and the TRRG:SV Treatment Readiness and Responsivity scales.

Based on these results, the strongest predictors ($p < .01$) of unsuccessful treatment completion were high pre-treatment scores on the VRS-SO Treatment Responsivity factor, low pre-treatment scores on the TRRG:SV Treatment Readiness and Responsivity scales, the presence of major institutional problems and major and violent institutional incidents, and pre-treatment problems with insight, treatment compliance, and denial. Additional significant predictors ($p < .05$) included prior non-sexual violent and non-sexual non-violent offenses, high pre-treatment scores on the VRS-SO Dynamic scale, Total, and Criminality factor, as well as the STABLE 2007, and pre-treatment problems with cognitive distortions.

In addition to being coded in a binary manner (i.e., successful program completion or attrition), program status was also coded in a continuous manner, according to total length of stay in the program. The average time in treatment was 7 months. Time in treatment was significantly related to successful program completion ($r = .35$, $p = .000$). Neither time in treatment nor successful program completion was significantly related to sexual, violent (including sexual), or any reconviction. Neither was correlated with static risk (i.e., Static-99, Static-99R, and VRS-SO Static scale). Successful completion was significantly negatively related to the VRS-SO Dynamic scale pre- and post-treatment and Criminality and Treatment Responsivity factors pre- and post-treatment. The correlations were stronger for the post-treatment measures compared to the pre-treatment measures. Time in treatment was only significantly related to the Dynamic scale and Treatment Responsivity factor post-treatment, and

to a lesser degree than successful program completion. Change on the VRS-SO Dynamic scale and factors was significantly related to successful program completion and time in treatment, with the correlations again being stronger for successful program completion. These findings indicate that higher risk and need offenders spend less time in treatment and are less likely to successfully complete treatment. Offenders who spend a longer time in treatment and are deemed to have successfully completed it by program staff are more likely to demonstrate positive change. And successful or unsuccessful program completion as rated by program staff appears to be a stronger indicator of program status than time in treatment alone.

Table 3.20

Comparisons between Program Completers and Non-Completers

Variable	Completers *M* (SD)	Completers %	Non-completers *M* (SD)	Non-completers %	r_{pb} or φ	χ^2 or *t*
Demographics						
Aboriginal descent	-	49.6	-	46.8	0.07	0.87
Single/never married	-	27.0	-	45.8	0.20†	7.48†
Predominantly unemployed	-	14.9	-	30.4	0.18	5.88
Age at program admission	36.3 (9.0)	-	36.1 (13.1)	-	0.01	-0.12
Education (years)	9.6 (2.3)	-	9.1 (3.3)	-	0.09	-1.22
Impaired cognitive ability	-	11.0	-	11.4	0.09	0.87
Learning difficulties	-	32.1	-	48.6	-0.15	3.10
Reading ability	9.3 (3.3)	-	8.5 (3.6)	-	0.10	-1.03
Mental Health						
Major mental illness	-	24.8	-	31.3	-0.06	0.76
Paraphilia	-	34.3	-	27.1	0.07	0.85
Substance use disorder	-	75.0	-	66.7	0.08	1.25
Personality disorder	-	64.9	-	72.9	-0.08	1.02
Antisocial personality disorder/traits	-	56.2	-	58.3	-0.02	0.07
Criminal History						
Rapist offender type	-	42.3	-	54.2	0.14	3.47
Prior sex offenses	2.2 (2.8)	-	2.3 (2.7)	-	-0.01	0.17
Prior non-sexual violent offenses	2.3 (3.2)	-	3.7 (4.6)	-	-0.17*	2.23*
Prior non-sexual non-violent offenses	9.4 (10.9)	-	13.7 (16.1)	-	-0.15*	2.03*
Prior sentencing dates	7.1 (6.1)	-	9.4 (9.6)	-	-0.14†	1.94†
Risk Measures						
Static-99R	4.8 (2.1)	-	5.2 (2.5)	-	-0.08	1.04
VRS-SO Static	11.1 (3.5)	-	11.2 (3.8)	-	-0.01	0.14
VRS-SO Dynamic	30.6 (5.2)	-	32.8 (5.7)	-	-0.18*	2.47*
VRS-SO Total	41.6 (7.3)	-	44.1 (7.5)	-	-0.15*	2.05*
VRS-SO Sexual Deviance	9.1 (3.7)	-	8.4 (3.8)	-	0.08	-1.10
VRS-SO Criminality	10.5 (3.6)	-	12.0 (3.6)	-	-0.18*	2.45*
VRS-SO Tx Responsivity	7.0 (2.1)	-	8.2 (2.6)	-	-0.22**	3.11**
STABLE 2007	14.4 (3.3)	-	15.6 (3.8)	-	-0.15*	1.98*
TRRG:SV Tx Readiness	11.2 (3.7)	-	7.3 (3.7)	-	0.42**	-6.22**
TRRG:SV Tx Responsivity	10.6 (3.9)	-	7.0 (3.6)	-	0.38**	-5.61**
Institutional Behavior						
Major institutional problems	-	4.4	-	46.8	0.52**	49.04**
Total institutional incidents	2.7 (9.2)	-	5.8 (15.2)	-	-0.12	1.36
Minor incidents	2.6 (5.4)	-	6.1 (14.9)	-	-0.17	1.57
Major incidents	0.3 (0.6)	-	1.6 (3.0)	-	-0.34**	2.90**
Non-violent incidents	1.5 (3.1)	-	6.2 (15.8)	-	-0.24†	1.96†

Violent incidents	0.4 (0.8)	-	1.6 (2.3)	-	-0.36**	3.09**
Program-related						
VRS-SO Cognitive Distortions	2.1 (0.6)	-	2.4 (0.8)	-	-0.19*	2.56*
VRS-SO Insight	1.9 (0.7)	-	2.3 (0.7)	-	-0.25**	3.54**
VRS-SO Tx Compliance	1.5 (1.3)	-	2.2 (1.0)	-	-0.23**	3.19**
TRRG:SV Tx Responsivity Denial	1.6 (0.7)	-	1.1 (0.8)	-	0.34**	4.85**
Time in treatment	7.3 (2.3)	-	5.4 (2.2)	-	0.35**	-5.04**
VRS-SO Dynamic change	5.5 (2.6)	-	0.5 (1.9)	-	0.66**	-11.93**
Sexual Deviance change	1.5 (1.2)	-	0.1 (0.8)	-	0.49**	-7.60**
Criminality change	1.7 (1.1)	-	0.3 (0.9)	-	0.51**	-8.11**
Tx Responsivity change	1.7 (1.0)	-	0.1 (1.0)	-	0.57**	-9.46**
STABLE 2007 change	3.9 (2.4)	-	0.3 (1.7)	-	0.58**	-9.70**
TRRG:SV Tx Readiness change	5.6 (3.0)	-	-0.1 (3.4)	-	0.62**	-10.68**
TRRG:SV Tx Responsivity change	6.0 (3.2)	-	0.3 (2.8)	-	0.63**	-10.94**

Note: Tx = Treatment; ** = $p < .01$; * = $p < .05$; $^{\dagger}p < .06$

3.9.2. Discriminant function analysis.

A discriminant function analysis was performed to examine the overall and independent contributions of the significant predictors of unsuccessful treatment completion (see Table 3.21). The following predictors were examined: total prior non-sexual violent and non-sexual non-violent offenses, the VRS-SO Dynamic score, Total score, Criminality and Treatment Responsivity scores, the STABLE 2007 score, the TRRG:SV Treatment Readiness and Responsivity scores, institutional adjustment problems, and number of major and violent institutional incidents. First, these 12 variables were entered simultaneously into the discriminant function equation. The discriminant function attained statistical significance and ($\chi^2 = 26.16$, $p = .01$) and correctly classified 79.0% of cases. The predictors that made unique contributions to the classification included: institutional problems, TRRG:SV Treatment Readiness, violent institutional incidents, major institutional incidents, TRRG:SV Treatment Responsivity, STABLE 2007, and VRS-SO Criminality. Second, the 12 variables were entered stepwise into the discriminant function equation in order to retain the strongest variables that contributed to the correct classification of successful/unsuccessful treatment completion. Two variables, institutional problems and TRRG:SV Treatment Readiness, were retained and correctly classified 77.7% of cases ($\chi^2 = 21.40$, $p = .000$)

Table 3.21

Discriminant Function Analysis Results and Summary of Unique Predictors

Variable	Standard canonical discriminant function coefficients	Discriminant loadings	Univariate *F*
Institutional problems	0.673	0.675	17.06**
TRRG:SV Treatment Readiness	-1.182	-0.542	11.00**
Violent institutional incidents	0.105	0.519	10.09**
Major institutional incidents	0.122	0.484	8.76**
TRRG:SV Treatment Responsivity	0.913	-0.462	7.99**
STABLE 2007	0.319	0.433	7.00*
VRS-SO Criminality	0.376	0.388	5.62*
VRS-SO Total	0.089	0.284	3.01
VRS-SO Dynamic	-0.456	0.254	2.41
VRS-SO Treatment Responsivity	0.032	0.184	1.23
Prior non-sexual violent offenses	-0.062	0.096	0.35
Prior non-sexual non-violent offenses	-0.354	-0.057	0.12

Note: ** $p < .01$; ** $p < .05$

3.9.3. Survival analyses.

Two series of survival analyses were performed. The first was to examine the recidivism trajectories of offenders who successfully completed the program compared to those who did not successfully complete the program (Figures 3.18 and 3.19). As noted previously, 74% of the sample successfully completed the program and 26% did not (half unsuccessfully completed and half were discharged). For sexual recidivism, the difference between the survival curves for those who successfully completed the program compared to those who did not was not significant, although it approached significance ($\chi^2 = 3.52$, $p = .06$). It is probable that this difference would have been significant with a larger sample of sexual recidivists. For violent recidivism, the difference between curves was significant ($\chi^2 = 4.58$, $p < .05$) indicating that offenders who successfully completed the program violently recidivated significantly less than offenders who did not successfully complete the program.

The second series of survival analyses examined the interaction of risk and program status (i.e., successfully completing the program or not) on recidivism (Figures 3.20 and 3.21). As with the previous section, "high risk" was defined as Static-99R scores ranging from -3 to 3 and "low risk" was defined as Static-99R scores ranging from 4 to 12. Regarding program status, those who successfully completed the program were labeled "complete" and those who did not successfully complete the program were labeled "noncomplete." Offenders were organized into the following groups: 1) low risk – complete, 2) low risk – noncomplete 3) high risk – complete and 4) high risk – noncomplete.

For sexual recidivism (Figure 3.20), the only significant difference was between the low risk – complete group and the high risk – noncomplete group ($\chi^2 = 5.66$, $p < .05$); these groups had the lowest and highest rates of recidivism, respectively, as would be expected. The difference in sexual recidivism trajectories between the high risk – complete group and the high risk – noncomplete group was trending towards significance ($\chi^2 = 2.93$, $p = .09$). While not significant, this finding demonstrates the effect of successful program completion on reducing sexual recidivism. Additionally, the high risk – complete curve was not significantly different from the low risk – noncomplete curve (visually they appear quite similar, especially after approximately 5 or 6 years); this indicates that high risk offenders who successfully completed the program had similar sexual recidivism trajectories to low risk offenders who did not successfully complete the program, which further illustrates the positive effect of successful program completion on sexual recidivism.

For violent recidivism (Figure 3.21), there were four significant differences between the survival curves: 1) low risk – complete and high risk – complete ($\chi^2 = 6.38$, $p < .05$); 2) low risk – complete and high risk – noncomplete ($\chi^2 = 13.96$, $p < .01$); 3) low risk – noncomplete and high risk – noncomplete ($\chi^2 = 6.58$, $p < .01$); 4) high risk – complete and high risk – noncomplete ($\chi^2 = 7.40$, $p < .01$). These results indicate a few conclusion: 1) low risk offenders had similar violent recidivism rates, regardless of whether or not they successfully completed the program; 2) low risk offenders had significantly lower violent recidivism rates than high risk offenders, regardless of program status, except that 3) low risk offenders who did not successfully complete the program did not have significantly different violent recidivism rates than high risk offenders who did successfully complete the program; and 4) high risk offenders who successfully completed the program had significantly lower violent recidivism rates than high risk offenders

who did not. Broadly, these findings mirror those found for sexual recidivism, and highlight even further the positive effect of successful program completion on reducing recidivism and the importance of assessing treatment-related variables, including program status, and dynamic risk.

Figure 3.18

Survival Analysis: Cumulative Proportion of Offenders Sexually Recidivating by Program Status

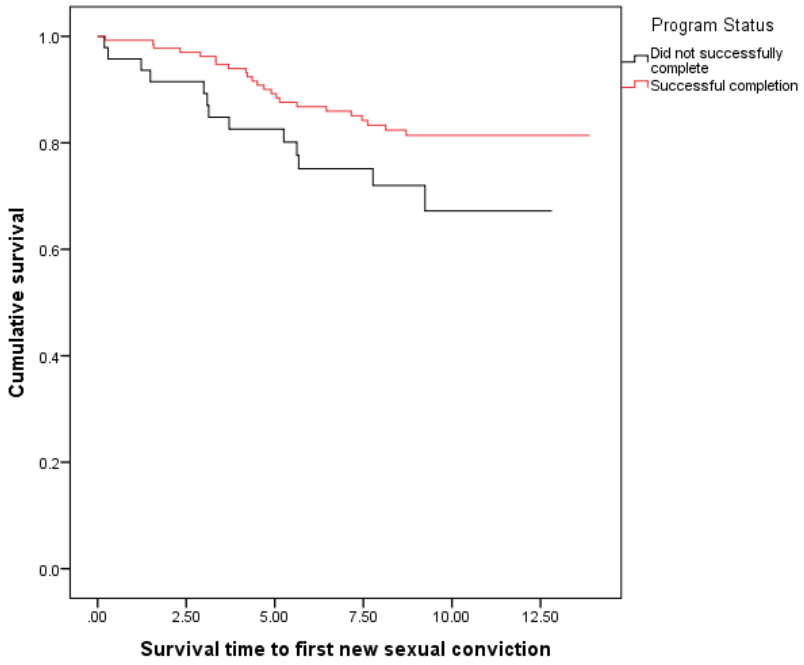


Figure 3.19

Survival Analysis: Cumulative Proportion of Offenders Violently Recidivating by Program Status

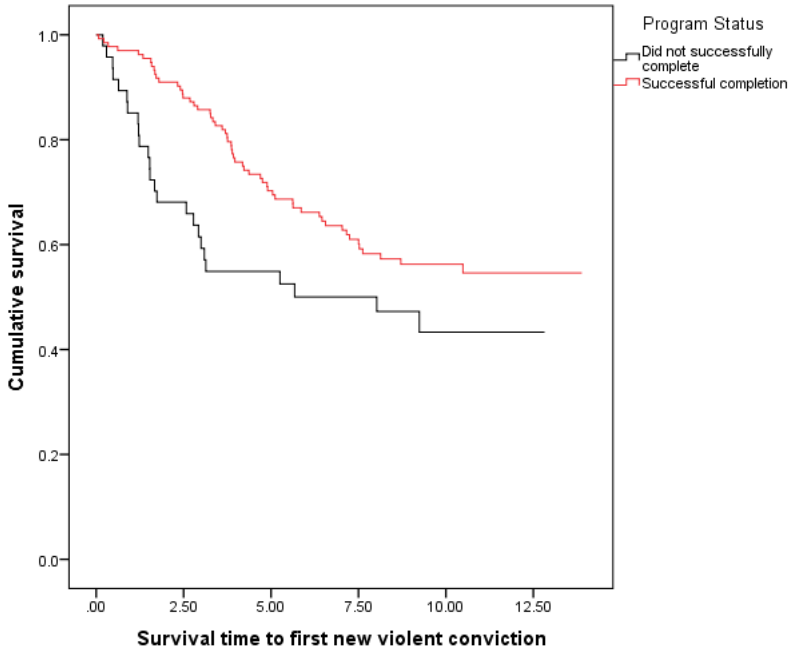


Figure 3.20

Survival Analysis: Cumulative Proportion of Offenders Sexually Recidivating by Static-99R Risk Level and Program Status

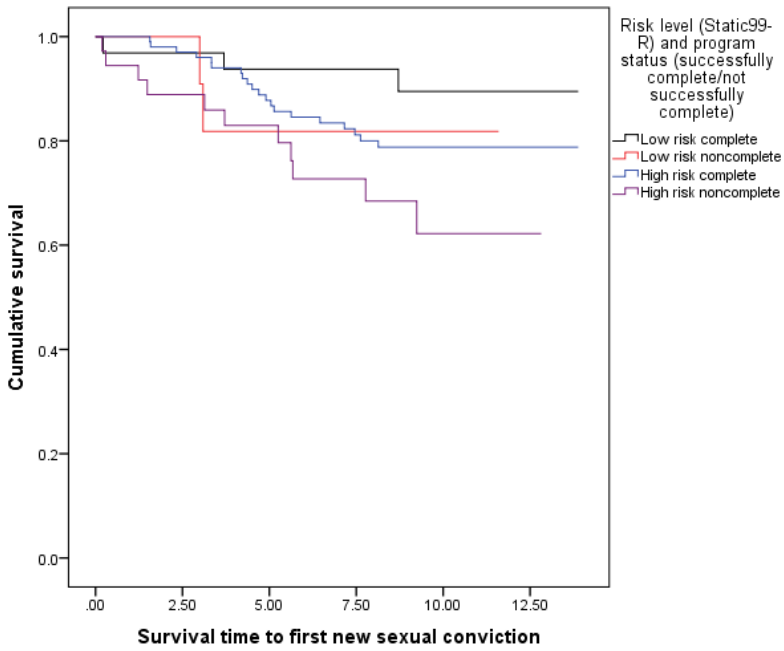
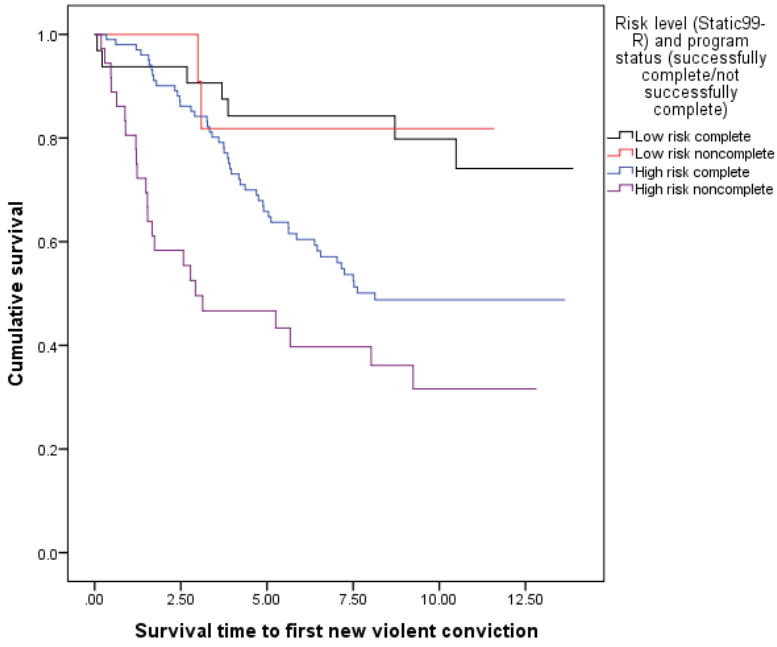


Figure 3.21

Survival Analysis: Cumulative Proportion of Offenders Violently Recidivating by Static-99R Risk Level and Program Status



Chapter 4. Discussion

The present program of research examined interrelationships among treatment readiness and responsivity, program participation, therapeutic change, and recidivism in a sample of sexual offenders. It is apparent from the relevant literature that sexual offending remains an important problem in Canada and that the field of psychology can be a part of the solution by effectively assessing and rehabilitating sexual offenders, thereby reducing recidivism and victimization. The program of research was divided into three sections, predominantly focusing on examining 1) the predictive accuracy of select risk assessment measures and clinical rating scales, 2) the predictive accuracy of therapeutic change measures, and 3) the effect of attrition and unsuccessful program completion on recidivism. The sample comprised 185 sexual offenders who attended the Clearwater Sex Offender Treatment Program at the Regional Psychiatric Centre in Saskatoon, Saskatchewan, Canada between 1997 and 2001. The Clearwater Program admitted high risk – high need sex offenders and was delivered in accordance with cognitive-behavioral and relapse prevention models of rehabilitation as well as the risk, need, and responsivity principles of effective correctional treatment.

Participants were on average 36 years of age upon admission to the Clearwater Program. They were approximately equally divided between Aboriginal (49%) and Caucasian (43%) descents. Aboriginal people are largely overrepresented in the criminal justice system. While they represented only 4.3% of the Canadian population (National Household Survey, 2011), they represented 19.3% of Canadian federal offenders (CSC, 2012). Further, while Aboriginal people represented 11% of the adult general population in Saskatchewan, they represented 81% of Saskatchewan's provincially sentenced custody (Perreault, 2009). Predominantly, participants had non-existent, intermittent, or unstable employment histories (85%) and were not currently involved in a common-law or marital relationship (81%). The average educational level attained was 9.5 years and approximately one-third of participants were assessed as having impaired cognitive abilities and/or learning difficulties. Half of the participants were diagnosed with a major mental illness (including paraphilias), three-quarters with a substance use disorder, and two-thirds with a personality disorder. The majority of participants were assessed as medium-high to high risk (76%). Institutional behavior problems were not uncommon, exhibited by 42% of participants. Three-quarters of participants successfully completed the program. The average length of stay in the program was 7 months.

Outcome (i.e., recidivism) information was available for 180 participants. The outcomes of particular interest were sexual and violent (including sexual) reconviction. Over an average follow-up of 9.3 years, the recidivism base rates were as follows: 20% sexual reconviction, 33% non-sexual violent reconviction, 45% violent (including sexual) reconviction, 49% non-violent reconviction, and 61% any reconviction. Sexual and violent recidivism were combined into a single category for two reasons. First, the lower base rate of sexual recidivism (compared to other types of recidivism) impacts the statistical power to find significant effects (e.g., Cortoni & Nunes, 2007; Hanson et al., 2002) and other authors have similarly combined sexual and violent recidivism (e.g., Helmus, Babchishin, & Blais, 2012; Wakeling et al., 2013). Given that the current study included only 36 sexual recidivists, this subsample size likely affected the statistical power to find significant results given the effect size magnitudes obtained in the current investigation. The results were often parallel (at times virtually equivalent) for sexual and violent (including sexual) recidivism, yet the results for sexual recidivism often failed to achieve statistical significance. This finding has been demonstrated elsewhere as well (e.g., Olver et al., 2012). However, the sexual recidivism base rate in the current sample is comparable to the rates observed by other studies of sexual offenders followed up for 10 years (e.g., 16.6% Helmus et al., 2012; 20% Harris and Hanson, 2004; 24.6% Olver et al., 2007) and is higher than the rates observed among lower risk samples (e.g., Beggs & Grace, 2011; Cortoni & Nunes, 2007). It is likely, therefore, that the base rate had only a partial effect on the results. It is possible that some findings falling slightly below the .05 threshold for significance would have attained significance with a larger sample and thus greater statistical power. Regarding the second reason for combining sexual and violent recidivism, it has been proposed that violent recidivism may capture or mask sexually motivated offending (e.g., Craig, 2011; Olver et al., 2012). For instance, Corbett, Patel, Erikson, and Friendship (2003) found that 12% of violent reconvictions were sexually motivated. Rice, Harris, Lang, and Cormier (2006) found that one-third (53/168) of non-sexual violent convictions were "clearly" or "probably" sexually motivated offenses.

Regarding sex offender classification, 45.5% of participants were classified as rapists, 22% as child molesters, 20% as mixed offenders, and 12.5% as incest offenders. According to VRS-SO Static scale mean scores, mixed offenders were the highest risk group, followed by child molesters, rapists, and then incest offenders. Incest offenders and child molesters were the

most sexually deviant groups (according to the VRS-SO Sexual Deviance factor) and rapists and mixed offenders were the most criminally oriented groups (according to the VRS-SO Criminality factor). Overall, rapists and mixed offenders had the highest rates of recidivism. However, the results were a bit different for sexual recidivism, with rapists, incest offenders, and mixed offenders having similar rates (i.e., 26%, 22%, and 19% respectively) and child molesters having a lower rate (i.e., 7.5%). While incest offenders are typically the lowest risk group of sex offenders (e.g., VRS-SO Static), their higher rates of sexual recidivism in this sample may be attributable to their high sexual deviancy scores. Due to the particular operationalization of incest offenders used in the current study (based on the VRS-SO definition), it is possible that the incest group included both intra- and extra-familial offenders, which may have contributed to the higher rates of recidivism as well.

Regarding inter-rater reliability, overall, the ratings were highly congruent across measures; for the Static-99, VRS-SO, and TRRG:SV results were significant at $p < .001$ and for the STABLE 2007 results were significant at $p < .05$ pre-treatment and $p < .01$ post-treatment. While statistically significant, however, the STABLE 2007 ICC results were relatively low (ICC = .46 pre-treatment and ICC = .61 post-treatment). This is worth noting as it is possible that the lower inter-rater reliability may have served to partially attenuate the relationship between the STABLE 2007 and outcome. The VRS-SO results (ICC = .74 to .97) were comparable to Olver et al. (2007; ICC = .66 to .79) and Beggs and Grace (2010; ICC = .79 to .92). Good inter-rater reliability was also demonstrated for the change measures, including change scores on the STABLE 2007. Such findings are encouraging given the number of steps involved in obtaining a change score (e.g., including pre-treatment scores, stages of change, and post-treatment scores); the greater the number of steps, the greater the chance for error or discrepancy to occur. Regarding scale reliability, the results were variable, with dynamic measures demonstrating greater internal consistency than static measures, and post-treatment measures demonstrating greater internal consistency than pre-treatment measures. While their results were greater than the current results, Olver et al. (2007) also found the VRS-SO dynamic items to have greater internal consistency than the static items, likely owing to the heterogeneity of item content of the static scales.

4.1 Risk Assessment

The risk assessment measures and clinical rating scales examined in the current program of research included the Static 99, Static-99R, VRS-SO, STABLE 2007, and TRRG:SV. All of the measures were significantly convergent. Of interest, the static measures (i.e., the Static-99, Static-99R, and VRS-SO Static) were slightly more highly correlated with the dynamic measures (i.e., the VRS-SO Dynamic and STABLE 2007) pre-treatment than post-treatment. A likely explanation for this finding is that the post-treatment measures capture therapeutic change, thus scores typically decrease, whereas the static measures are unable to capture this change and scores remain unaltered. The TRRG:SV total scores were slightly more highly correlated with the VRS-SO Dynamic total score than the VRS-SO Total score, indicating that the addition of static items likely decreased the magnitude of relationship. Overall, the convergent validity correlations were strong, indicating that the measures encompass related constructs; however, they were not so large as to indicate redundancy, which supports using multiple measures for comprehensive assessment.

Regarding the predictive accuracy of the measures for sexual, violent (including sexual), and any recidivism, generally the statistical significance of the results increased as the recidivism base rates increased. Overall, dynamic measures achieved higher predictive validity magnitudes than static measures, and post-treatment measures attained higher predictive validity magnitudes than the pre-treatment measures. This supports the notion that dynamic post-treatment ratings, which capture therapeutic change, provide more accurate estimations of risk than static and pre-treatment measures. For sexual recidivism, none of the static measures were significant. This may have been due, in part, to range restriction. The sample was predominantly high risk, with 76% of participants obtaining risk scores in the medium-high to high risk ranges. The standard deviations (which measure the range of scores) were quite low, particularly for the static measures. For example, in the current sample, the standard deviations were as follows: VRS-SO Static = 3.6, Total pre-treatment = 7.4, and Total post-treatment = 7.6. Other studies of the VRS-SO have observed greater ranges of risk scores among their participants and correspondingly larger standard deviations. For example, for the VRS-SO Static scale and Total pre- and post-treatment, Olver et al. (2007) observed standard deviations of 4.0, 10.0, and 9.9 respectively, and Beggs and Grace (2010) observed standard deviations of 4.7, 9.2, and 9.6 respectively. The lower standard deviations in the current sample indicate less variability and, as a result, likely

poorer discrimination between recidivists and non-recidivists. Nevertheless, this supports the adherence of the Clearwater Program to the risk principle, in that predominantly high risk offenders were admitted to the high intensity program. Participants were screened into the program based on their Static-99 scores, which would have further decreased the variability of static scores among the sample. While range restriction may have impacted the results to a degree, it is also possible that static measures do not predict outcome as accurately as dynamic measures among treated offenders.

Many of dynamic measures, however, were significant in the prediction of sexual recidivism, with the best predictors (significant at $p < .01$) comprising the VRS-SO Dynamic scale post-treatment, the VRS-SO Criminality factor pre- and post-treatment, and the TRRG:SV Treatment Readiness and Treatment Responsivity scales post-treatment. Additional significant predictors (at $p < .05$) included the VRS-SO Dynamic scale pre-treatment, the VRS-SO Total scores, the VRS-SO Treatment Responsivity factor post-treatment, the STABLE 2007 post-treatment, the TRRG:SV Treatment Readiness and Treatment Responsivity scales pre-treatment, and the TRRG:SV Gain scale. For violent (including sexual) recidivism, most of the measures were significant (at $p < .01$), excluding the Static-99, the VRS-SO Static scale, and the VRS-SO Sexual Deviance factor. For any recidivism, all of the measures were significantly predictive, most at $p < .01$. The VRS-SO Criminality factor was a particularly strong predictor ($r_{pb} = .48$ pre-treatment and .44 post-treatment).

In their multisite examination of the VRS-SO, Olver et al. (2013) found some similar patterns of results. They found that the VRS-SO Dynamic scale pre- and post-treatment significantly predicted each outcome (i.e., sexual, violent, and general recidivism) with moderate accuracy (AUC = .66 to .69 compared to AUC = .63 to .68 in the current study). Like the current study, the Criminality factor pre- and post-treatment significantly predicted all outcomes, as did the Treatment Responsivity factor to a lesser degree, but the Sexual Deviance factor did not predict any outcomes. Olver et al. (2013) remarked that while Hanson and Bussière (1998) found sexual deviance to be a robust predictor of sexual violence, Hanson and Morton-Bourgon (2005) found it to demonstrate a considerably smaller magnitude of prediction. Further, Helmus, Babchishin, and Blais (2012) found that the major sexual deviance items of the STABLE 2007 were largely not predictive of any recidivism outcomes; that is, for sexual preoccupations/sex drive, sex as coping, and deviant sexual interests, AUC values ranged from .514 to .649.

Another notable finding was that the VRS-SO Sexual Deviance factor pre- and post-treatment significantly negatively correlated with any recidivism (r_{pb} = - .20 and -.18), including both any new non-sexual violent conviction and any new non-violent conviction. Olver and Wong (2006) also found significant, negative relationships between Sexual Deviance and any nonsexual violence and any nonsexual conviction (r_{pb} = -.21 and -.25). They suggested that highly sexually deviant individuals may be so preoccupied with their deviant interests that it reduces the likelihood of committing non-sexual offenses.

The findings regarding the TRRG:SV are worth highlighting. The TRRG:SV is not a risk assessment measure, but rather a clinical rating scale designed to assess treatment-related variables within the domains of treatment readiness and responsivity as well as to capture treatment-related change and gain. Nevertheless, the TRRG:SV scales performed equally well compared to the risk assessment measures in predicting recidivism. This is consistent with a few lines of reasoning. Offenders who are high risk, and thus most likely to reoffend, tend also to be high need, which is captured by the TRRG:SV. This was demonstrated by the convergence between the risk assessment measures and the TRRG:SV (i.e., high risk scores converged with high need scores). There is a considerable amount of overlap between the TRRG:SV items and the items, or risk factors, of the risk assessment measures. For instance, Callousness and Procriminal Views on the TRRG:SV are comparable to Criminal Personality on the VRS-SO and Lack of Concern for Others on the STABLE 2007; Intimidation on the TRRG:SV is comparable to Interpersonal Aggression on the VRS-SO and Hostility Toward Women on the STABLE 2007; Treatment Behaviors (TRRG:SV) is comparable to Treatment Compliance (VRS-SO); and Rigidity (TRRG:SV) is comparable to Poor Problem Solving (STABLE 2007). Thus it appears that the TRRG:SV is not just assessing treatment-related variables, but is in fact also assessing criminogenic needs. Finally, while the TRRG:SV was developed for offenders in general and does not include any sex offender-specific items, it was found in the current study, and previously by Helmus, Babchishin, and Blais (2012) and Olver et al. (2013) that sexual deviance items and domains were not strongly related to recidivism.

Three series of Cox regression analyses were performed. Controlling for the Static-99R, the VRS-SO Dynamic scale pre- and post-treatment significantly incrementally added to the prediction of sexual and violent (including sexual) recidivism. The STABLE 2007 demonstrated significant incremental predictive validity controlling for the Static-99R as well; the pre-

treatment score was significant for violent (including sexual) recidivism and the post-treatment score was significant for both outcomes. For both of these analyses, results were stronger for post-treatment compared to pre-treatment measures, as well as for violent (including sexual) compared to sexual recidivism. Regarding the latter point, some of the Exp(B) values were practically equivalent for sexual and violent recidivism (e.g., 1.08 compared to 1.07), yet the results were more highly significant for violent (including sexual) recidivism likely owing to the greater base rate, subsample size, and thus statistical power. Controlling for the STABLE 2007, the VRS-SO Dynamic scale demonstrated significant incremental predictive validity for all of the conditions except for the pre-treatment prediction of violent (including sexual) recidivism; in this condition, only the STABLE 2007 was significantly predictive. These results are consistent with previous studies that have demonstrated the incremental predictive validity of dynamic measures (e.g., Beggs & Grace, 2010; Hanson et al., 2007; Olver et al., 2007; Olver et al., 2013). Taken together, these results support the utility of using static and dynamic risk assessment measures and clinical rating scales in concert, as well as the added advantage of incorporating dynamic measures.

Survival analyses were performed to examine the predictive accuracy of the VRS-SO Total and STABLE 2007, as well as the recidivism rates, among risk level groups (i.e., low to moderate-low, moderate-high, and high on the VRS-SO and low, moderate, and high on the STABLE 2007). Of note, the low and moderate-low groups were combined for the VRS-SO given the negligible amount of offenders in the low risk group. There were also no offenders in the low risk group pre-treatment for the STABLE 2007. For both measures, the survival curves were consistent with the anticipated recidivism trajectories. That is, higher risk offenders recidivated faster and to a greater degree than lower risk offenders. In other words, with each successive increase in risk category, recidivism rates were higher and occurred faster.

For sexual recidivism, the only significant difference between groups was for the VRS-SO Total post-treatment between low to moderate-low and high risk groups. This is consistent with previous findings indicating that post-treatment risk level is a better indicator of recidivism than pre-treatment risk level. Further, there were more offenders in the low to moderate-low group post-treatment compared to pre-treatment (i.e., there was a greater sample size to enable finding significant results). Overall, risk was higher pre-treatment and decreased post-treatment given therapeutic change and corresponding reductions in risk scores. To illustrate, this means

that some offenders who were in the moderate-high category pre-treatment would move into the moderate-low category post-treatment. Finally, the difference between these groups (i.e., between the lowest and highest risk groups) was naturally the largest.

Regarding violent recidivism, for the VRS-SO Total pre-treatment, the moderate-high risk group was significantly different from the high risk group, having slower and lower rates of recidivism. For the VRS-SO Total post-treatment, the low to moderate-low risk group was significantly different from the moderate-high and high risk groups. For the STABLE 2007 pre- and post-treatment, the moderate risk group was significantly different than the high risk group. To summarize, the survival curves were as expected, with higher risk offenders demonstrating steeper curves than lower risk offenders, indicating greater recidivism. Overall, the differences between risk groups tended to attain statistical significance when the sample sizes of the conditions were sufficiently large.

4.2 Therapeutic Change

Subsequent to examining the predictive accuracy of the risk assessment measures and clinical rating scales, the dynamic measures (i.e., the VRS-SO, STABLE 2007, and TRRG:SV) were examined in terms of their ability to assess therapeutic, or treatment-related, change (i.e., from pre- to post-treatment). The relationship between change and recidivism was also examined. The change measures included the VRS-SO Dynamic scale and Sexual Deviance, Criminality, and Treatment Responsivity factors, the STABLE 2007, and the TRRG:SV Treatment Readiness and Treatment Responsivity scales. The TRRG:SV Treatment Gain scale was included in relevant analyses as it constitutes a post-treatment measure of overall amount of gain, or change, achieved. Comparable amounts of change were demonstrated across the measures, and all of the change measures significantly converged with one another. Change on the VRS-SO significantly converged with the TRRG:SV Treatment Readiness, Responsivity, and Gain scale total scores as well. Logically, VRS-SO change highly correlated with the TRRG:SV post-treatment and gain measures. VRS-SO change also significantly correlated with the TRRG:SV pre-treatment measures, indicating that, overall, the higher the offenders' pre-treatment level of readiness and responsivity, the more change they are likely to make.

The average amounts of change (and corresponding effect sizes) demonstrated on the VRS-SO in the current study were as follows: Dynamic = 4.2 (d = .74), Sexual Deviance = 1.2 (d = .34), Criminality = 1.3 (d = .37), and Treatment Responsivity = 1.3 (d = .54). These results are

comparable to the results demonstrated by other studies of the VRS-SO. For instance, in their study of Clearwater Program participants, Olver et al. (2007) demonstrated the following average amounts of change: Dynamic = 2.56, Sexual Deviance = 0.57, Criminality = 0.78, and Treatment Responsivity = 0.90. And in their multisite examination of risk and change, Olver et al. (2013) demonstrated the following average amounts of change (and corresponding effect sizes) among high intensity program participants: Dynamic = 3.83 (d = .62), Sexual Deviance = 1.08 (d = .31), Criminality = 1.29 (d = .39), and Treatment Responsivity = 1.09 (d = .46). In both the current study and the Olver et al., (2013) study, the most substantive changes were observed for the Dynamic scale and Treatment Responsivity factor. Taken together, these findings support the ability of the VRS-SO to validly and reliably assess change across time and samples.

The capacity for therapeutic change to inform recidivism was subsequently examined. The predictive validity results (i.e., zero-order correlations and AUCs) were in the anticipated direction, indicating that the greater the change, the lower the rates of recidivism. Change on the TRRG:SV Treatment Readiness and Treatment Responsivity scales significantly predicted sexual recidivism. All of the change measures significantly predicted violent (including sexual) recidivism except for the VRS-SO Criminality factor and the STABLE 2007. And only change on the VRS-SO Sexual Deviance factor predicted any recidivism. Olver et al. (2013) similarly found limited significant results between VRS-SO change scores and recidivism with zero-order correlations. Specifically, they found only that Sexual Deviance change predicted violent recidivism and Sexual Deviance and Treatment Responsivity change predicted general recidivism. In the current study, partial correlations were computed to examine the unique relationship between change and outcome controlling for risk (i.e., the Static-99R). Overall, there were negligible differences between the zero-order and partial correlations, indicating that static risk did not significantly influence the relationship between change and recidivism.

Previous studies (e.g., Beggs & Grace, 2011; Olver et al., 2013) have suggested that pre-treatment risk scores have a constraining effect on change scores; that is, change is typically limited among low risk offenders and higher among high risk offenders. In the current study, change scores were correlated with their respective pre-treatment scores to examine this suggestion. The correlations were indeed positive, indicating that the greater the pre-treatment risk score, the greater the amount of change achieved. The results for the VRS-SO and STABLE

2007 were significant (or trending toward significance), except for the Sexual Deviance factor. The TRRG:SV change scores were not significantly correlated with their pre-treatment scores.

Given these findings, semi-partial correlations were computed to examine the relationship between change and recidivism controlling for pre-treatment risk. The semi-partial correlations were slightly, but not significantly, larger than the zero-order correlations for the VRS-SO and STABLE 2007 change scores for all forms of recidivism. Olver et al. (2013) demonstrated larger and more significant results with semi-partial compared to zero-order correlations. Computing semi-partial correlations likely did not have a significant impact on the change results in the current study given that the sample was relatively uniformly high risk. The less variability there is (demonstrated by smaller standard deviations), the smaller the impact will be of partialling it out. In the current study and the Olver et al. (2013) study, change on the VRS-SO Sexual Deviance factor significantly predicted violent and general, but not sexual, recidivism. Overall, these findings support the notion that pre-treatment risk constrains therapeutic change and higher risk offenders will, on average, demonstrate greater change than lower risk offenders. However, controlling for pre-treatment risk only slightly improved the relationship between change and recidivism given the range restriction among risk scores. Further, according to the present results, pre-treatment readiness and responsivity scores do not affect change on these measures. That is, offenders with low and high levels of treatment-interfering issues are capable of achieving comparable amounts of change in these areas.

Cox regression analyses were performed to further examine the capacity of the change measures to predict recidivism controlling for risk. For the VRS-SO change measures, the same pattern of results was found controlling for the Static-99R, VRS-SO Static, and VRS-SO Total pre-treatment. None of the change scores significantly predicted sexual recidivism, although the Exp(B) values were in the anticipated direction. While this may have been partly due to power limitations given the small sample size of sexual recidivists, the Exp(B) values were also larger for a number of the measures for violent (including sexual) recidivism, indicating stronger relationships. Nevertheless, the Sexual Deviance change score Exp(B) value for sexual recidivism (Exp(B) = .80) was comparable to the one for violent (including sexual) recidivism (Exp(B) = .78) and may have been significant with a larger sample of sexual recidivists. Change on the Dynamic scale and Sexual Deviance and Treatment Responsivity factors, but not the Criminality factor, significantly predicted violent (including sexual) recidivism. Controlling for

Static-99R and STABLE 2007 pre-treatment risk, change on the STABLE 2007 did not significantly predict either sexual or violent (including sexual) recidivism. Controlling for the VRS-SO Total, TRRG:SV Treatment Readiness and Treatment Responsivity change scores significantly predicted sexual and violent (including sexual) recidivism and the Treatment Gain scale total score significantly predicted violent (including sexual) recidivism. These results support the incremental predictive validity of therapeutic change scores over and above static and dynamic risk scores. As such, there appears to be worthwhile utility in incorporating not just dynamic measures into risk assessment, but change measures as well.

Regarding the VRS-SO results, Olver et al. (2013) found that controlling for static and dynamic risk, only the Criminality change score significantly predicted sexual recidivism. The Dynamic change score trended toward significance for violent recidivism. As with the current study, they found that the Sexual Deviance change score, but not the Criminality change score (or the Treatment Responsivity change score in their study), significantly predicted violent recidivism. Taking together the results of the previous section (the predictive validity of the risk assessment measures and clinical rating scales) and the results of the current section (the predictive validity of the change measures), there is one notable finding worth further discussion. The VRS-SO Sexual Deviance factor total score did not significantly predict sexual or violent (including sexual) recidivism, but the change score significantly predicted violent (including sexual) recidivism and may have predicted sexual recidivism with greater statistical power. These change results support the utility of the Sexual Deviance factor. Further, these results parallel the results of Olver et al. (2013), who suggested that changes in the domain of sexual deviance may extend to changes in other domains and reductions in other forms of antisocial behavior and recidivism. They remarked that the Sexual Deviance factor comprises five items (i.e., Sexually Deviant Lifestyle, Sexual Compulsivity, Offense Planning, Sexual Offending Cycle, Deviant Sexual Preference), and that making changes and developing skills in these areas (e.g., developing a comprehensive offense cycle including cognitive, emotional, and behavioral components) may effect other change and development as well.

In general, across the analyses (i.e., the predictive validity of the risk assessment measures, clinical rating scales, and change measures), the effects were more robust for violent (including) sexual recidivism compared to sexual recidivism. This pattern has been demonstrated by previous studies of sex offender risk and treatment outcome as well (e.g., Olver

et al., 2012, 2013). For example, in both the current study and the Olver et al. (2013) study, the VRS-SO Dynamic scale change score and Sexual Deviance factor change score significantly predicted violent, but not sexual, recidivism. Multiple issues may have contributed to this pattern. First, the base rate of sexual recidivism (20%) was much lower than the base rate of violent (including sexual) recidivism (45%), which resulted in a sexual recidivist sample size of 36 and a violent (including) sexual recidivist sample size of 81. The lower base rate of sexual recidivism combined with the size of the sample may, therefore, have limited the statistical power to find significant results. Second, it has been suggested (e.g., Corbett et al., 2013; Craig, 2011; Olver et al., 2012, 2013; Rice et al., 2006) that violent recidivism captures, or masks, sexually motivated recidivism that is prosecuted under non-sexual as opposed to sexual Criminal Code categories. Third, sex offender treatment programs should, in theory, target multiple sex offender-specific and non-specific criminogenic needs, consistent with the need principle (Olver et al., 2012). The Clearwater Sex Offender Treatment Program does indeed adhere to this principle and target multiple domains of functioning, as indicated previously in the description of the program. If this is the case, in all likelihood therapeutic effects would extend to other forms of antisocial behavior as well, including violence. Indeed, outcome evaluations, including meta-analyses, have demonstrated significant reductions in violent and general recidivism among sex offender program participants (e.g., Hanson et al., 2009; Lösel & Schmucker, 2005)

In the previous section, the predictive validity of dynamic risk measures and the incremental predictive validity of dynamic measures over static measures were demonstrated. Additionally, the predictive validity of a clinical rating scale (the TRRG:SV), designed to inform treatment, not assess risk, was also demonstrated. Overall, post-treatment dynamic measures attained higher predictive validity magnitudes than pre-treatment measures in the prediction of recidivism. In the current section, the predictive validity of therapeutic change scores and the incremental predictive validity of change scores over static and pre-treatment dynamic risk scores were demonstrated. Similarly, Olver and Wong (2011a) found that, with increasing amount of change, the predictive accuracy of the Static-99 decreased. Overall, these results suggest that effectively-administered correctional programs (in this case, a high intensity program adhering to the principles of risk, need, and responsivity) have the ability to effect non-trivial amounts of change among program participants. It is possible that, among these participants who made notable amounts of change, pre-treatment assessments of risk became less

valid. That is, treatment provision, therapeutic change, and corresponding reductions in risk served to diminish, at least in part, the predictive accuracy of static and pre-treatment measures of risk. This is consistent with findings that post-treatment measures appeared to have a stronger relationship to outcome than pre-treatment measures and that change was significantly negatively related to recidivism.

While partial correlation indicated that static risk had a negligible effect on the relationship between change and recidivism, it was subsequently found that change scores were significantly correlated with pre-treatment risk scores and that controlling for pre-treatment risk with semi-partial correlations improved to some degree the predictive validity of the change scores. As such, survival analyses were performed to further examine the interaction between level of risk (Static-99R) and amount of change (VRS-SO Dynamic scale) on recidivism. Participants were divided into the following four groups: low risk – high change, low risk – low change, high risk – high change, high risk – low change. For sexual recidivism, there were no significant differences between the groups. However, there were a limited number of events (i.e., sexual recidivists) in each group and, while not significant, the general pattern of results was the same as for violent (including sexual) recidivism . For violent (including sexual) recidivism, the low risk groups were not significantly different (i.e., low risk offenders who made low change and low risk offenders who made high change had similar rates of recidivism). This would be expected given the finding that low risk offenders are constrained in the amount of change they can demonstrate. The recidivism trajectories of the low risk groups were, however, significantly different from the trajectories of the high risk – low change group, but not the high risk – high change group. Further, the high risk – high change group was significantly different from the high risk – low change group.

These findings indicate that the recidivism trajectories of high risk offenders who make a high amount of change are more similar to the recidivism trajectories of low risk offenders than high risk offenders who make a low amount of change. In other words, effectively treated high risk offenders more closely resemble low risk offenders than high risk offenders in terms of risk for recidivism. Additionally, labeling this group (i.e., high risk – high change offenders) as "high risk" post-treatment may not accurately reflect their actual likelihood of risk (it may in fact be overestimating their likelihood of risk). As such, examining only static risk post-treatment may not properly capture risk, particularly for high risk offenders. To illustrate, if two offenders

score the same ("high") on the Static-99R, but one makes a low amount of change and the other makes a high amount of change, according to the Static-99R, these two offenders continue to present the same risk to reoffend. However, according to the current results, the high risk offender who made a high amount of change is in actuality at a lower risk to reoffend. Additional survival analyses also demonstrated that, for violent (including sexual) recidivism, "high change" offenders recidivated significantly less than "low change" offenders. These results are consistent with Olver and Wong (2011a), who found that high risk offenders who made a high amount of change demonstrated similar post-treatment risk scores to low risk offenders and significantly lower rates of sexual recidivism compared to high risk offenders who made a low amount of change. These findings further support the dynamism of risk, the VRS-SO's ability to capture it, and the necessity of utilizing dynamic, including change, measures.

4.3 Treatment Attrition

Previous studies have indicated that treatment dropouts, or non-completers, are higher risk and higher need than treatment completers and that dropout, or attrition, is significantly related to increased recidivism rates among sex offenders (e.g., Beyko & Wong, 2005; Olver et al., 2011; Seager et al., 2004). As such, the current study examined predictors of attrition and the relationship between attrition and recidivism. Treatment attrition was operationalized as including all participants who did not successfully complete the Clearwater Program (i.e., as "unsuccessful treatment completion"), including those who were discharged as well as those who attended, but did not successfully complete, the program. Overall, 26% of participants successfully completed the program (i.e., "Completers") and 74% did not successfully complete the program (i.e., "Non-completers"). Half of the Non-completers were discharged and half unsuccessfully completed the program.

Predictors of attrition were examined in the following categories: demographics, mental health, criminal history, pre-treatment risk measures, institutional behavior, and program-related. Demographic and mental health variables were not significantly related to attrition. The strongest and most highly significant predictors were found in the categories of pre-treatment risk measures, institutional behavior, and program-related. These included: high scores on the VRS-SO Treatment Responsivity factor; low scores on the TRRG:SV Treatment Readiness and Responsivity scales; major institutional problems, including major and violent institutional incidents; and problems with insight, treatment compliance, and denial. Secondary, but still

significant, predictors included: prior non-sexual violent and general offenses; high scores on the VRS-SO Dynamic scale, Total score, and Criminality factor, and the STABLE 2007; and problems with cognitive distortions. On average, treatment Completers spent a significantly longer time in treatment and made significantly more change on all of the change measures compared to treatment Non-completers. Overall, these results are consistent with previous studies in that treatment dropouts were found to be higher risk and higher need, to spend less time in treatment, and to make less therapeutic change compared to treatment completers.

The variables that were found to significantly differentiate between treatment Completers and Non-completers, or to predict attrition, were entered into a discriminant function analysis to examine the unique and overall contributions they made to the classification of Completers versus Non-completers. Together, the 12 variables correctly classified 79.0% of cases. The variables were then entered stepwise into the analysis to identify the strongest predictors that contributed to correct classification. Institutional problems and TRRG:SV Treatment Readiness scores were identified and, together, correctly classified 77.7% of cases.

Similar to Beyko and Wong (2005), in the present study the VRS-SO pre-treatment Criminality and Treatment Responsivity, but not Sexual Deviance, factor scores significantly predicted treatment attrition. Beyko and Wong (2005) also similarly found that attitude toward treatment and denial of sexual offense (rated using four-point Likert scales) predicted attrition. Additionally, in both studies similar demographic variables (e.g., ethnicity, education, employment history) and intellectual functioning did not predict treatment attrition. These similarities are reasonable given that both studies examined attrition among participants of the Clearwater Sex Offender Program during overlapping time periods. Beyko and Wong (2005) remarked that treatment attrition results are necessarily impacted by the particular program and sample under examination. They also suggested that, in terms of program retention, negative findings (i.e., non-predictors) reflect that the program is unbiased regarding these participant characteristics. In other words, the program is attuned to participant responsivity issues which may facilitate retention of individuals with such issues. For Beyko and Wong (2005), this implied that the program was impartial towards participants' risk level, sexual deviancy, employment history, education, intellectual abilities, cultural background, and marital status. Beyko and Wong (2005) captured risk level with the Static-99. In the current study, static measures of risk were also found to be unrelated to attrition, but dynamic measures were found

to be related (i.e., Non-completers were significantly higher risk than Completers). Beyko and Wong (2005) noted that these findings are consistent with the Clearwater Program's intent to treat high risk, sexually deviant offenders and to be responsive to cultural background (e.g., integrating cultural teachings) and intellectual and educational abilities (e.g., writing program materials at a grade 4 to 5 level).

Olver and Wong (2011b) also examined treatment attrition among offenders who participated in the Clearwater Program between 1983 and 1997 (i.e., prior to the time period of the current study). There are many similarities worth noting between the Olver and Wong (2011b) study and the current study. Olver and Wong (2011b) included premature withdrawals and discharges in their group of treatment dropouts and reported a dropout rate of 15%. This is comparable to the discharge rate of 13% in the current study. They similarly found that many demographic variables were unrelated to attrition, except for marital status (never married) and employment background (unemployed). In the current study, marital status (never married) trended toward significance in the prediction of attrition. Olver and Wong (2011b) speculated that this may have been due to conflicts between the predominantly female Clearwater staff and offenders with significant interpersonal difficulties with women. There were many similar non-predictors between the studies in addition to the demographic variables, including major mental illness, substance use disorder, and paraphilia diagnoses; sex offender type; and prior sex offenses. Consistent with Beyko and Wong (2005) and the current study, Olver and Wong (2011b) found that the Static-99 was unrelated to attrition and that the VRS-SO Criminality and Treatment Responsivity factors, but not the Sexual Deviance factor, significantly predicted attrition. As with the current study, Olver and Wong (2011b) found that the VRS-SO Total was significantly related to dropout (Beyko and Wong, 2005, did not report results related to the VRS-SO Total).

Overall, these results support the notion that high risk, high need offenders (i.e., those most in need of treatment) are the ones who are most likely to dropout. The Clearwater Sex Offender Treatment Program, however, has demonstrated relatively low attrition rates compared to reviews of other sex offender programs (e.g., 19% to 37.5% reported by Wormith et al., 2002; 26% to 77% reported by Olver & Wong, 2011b). In addition, many variables that constitute responsivity issues (e.g., ethnicity, education, intellectual functioning, and psychological disorders) were found to be unrelated to attrition in studies of the Clearwater Program. This

suggests that the program effectively addressed responsivity issues and had relative success at retaining individuals with such issues in the program. It appears that, for example, offenders with cognitive or psychological difficulties were retained in the program to the same degree as offenders without such difficulties. This is a notable finding considering the nontrivial proportion of the current sample that was found to demonstrate such issues (i.e., 30% were diagnosed with impaired cognitive abilities and 53% with a major mental illness). Olver and Wong (2013) stated that "it has always been the mandate of the Clearwater Program to accommodate the responsivity needs of the client" (p. 10), including factors such as literacy, cognitive functioning, personality, mental disorder, social skills, and culture.

A number of indicators of treatment readiness and responsivity were, however, significantly related to attrition, including low TRRG:SV Treatment Readiness and Responsivity scores, high VRS-SO Treatment Responsivity scores, and high scores relating to problems with cognitive distortions, insight, denial, and treatment compliance. Additionally, the occurrence of major institutional problems and incidents were significantly related to attrition. These findings indicate that treatment dropouts, or non-completers, are likely to be a particularly difficult clientele to work with. Nevertheless, as Beyko and Wong (2005) and Olver and Wong (2011) commented, these risk factors for dropout should not be used to screen out or remove difficult offenders from treatment. Rather, this information could be used to target these offenders and make provisions to address their additional responsivity issues in order to increase the likelihood that they will remain in, and benefit from, treatment.

Upon examining the predictors of, or risk factors for, treatment attrition, the relationship between treatment attrition and recidivism was examined. Survival analysis was used to compare the recidivism trajectories of offenders who successfully completed the program versus those who did not. For sexual recidivism, the difference between curves followed the same pattern as for violent (including sexual) recidivism and trended toward significance. For violent (including sexual) recidivism, the curves were significantly different, indicating that offenders who successfully completed the program had significantly slower and lower rates of recidivism compared to those who did not successfully complete the program.

A second series of survival analyses examined the interaction of risk (Static-99R) and program completion or non-completion on recidivism. Participants were divided into the following four categories: low risk – complete, low risk – noncomplete, high risk – complete,

high risk – noncomplete. For sexual recidivism, the low risk – complete and high risk – noncomplete curves (i.e., the lowest and highest rates of recidivism) were significantly different. Additionally, the difference between the high risk – complete and high risk – noncomplete curves trended toward significance. This indicates that successful program completion reduced sexual recidivism. Both groups were assessed as having the same risk (i.e., high risk), but did not recidivate to the same degree. Rather, the group that successfully completed the program recidivated less despite having the same risk on the Static-99R. Further, the high risk – complete curve did not significantly differ from the low risk – noncomplete curve. This indicates two things. First, that the high risk offenders who successfully completed the program closely resembled a low risk group of offenders. Second, that among low risk offenders, unsuccessful program completion resulted in higher recidivism rates compared to successful program completion.

For violent (including sexual) recidivism, there were four significant differences among the survival curves comparing successful and unsuccessful program completers. The main points are as follows. First, low risk offenders recidivated to a similar degree regardless of program status (i.e., completion or non-completion) and recidivated significantly less than high risk offenders regardless of program status. The exception to this was that low risk – noncompleters did not significantly differ from high risk – completers (this was found, and previously described, for sexual recidivism). Second, high risk – completers recidivated significantly less than high risk – noncompleters (this was also found for sexual recidivism, except that the result was only trending towards significance). Generally then, the pattern of results was comparable for sexual and violent (including sexual) recidivism.

These results are broadly consistent with Seager et al. (2004) who, as part of their study on treatment attrition, also examined the interaction between risk and treatment completion on recidivism. They categorized participants as low or high risk based on Static-99 scores and found that, among treatment completers, low and high risk offenders had similarly low rates of recidivism (4% and 5% respectively). Among noncompleters, 27% of low risk, and 35% of high risk, offenders recidivated. Low-risk noncompleters were 5 times more likely to recidivate than high-risk completers (recidivism rates of 27% and 5% respectively). As with the current study, these results indicate that high risk treatment completers demonstrate similar recidivism rates as low risk treatment noncompleters. As discussed in previous sections, these findings highlight the

importance of assessing treatment-related variables (i.e., program participation and completion and therapeutic change) in addition to static and dynamic risk. They also highlight the relationship between treatment attrition and increased rates of recidivism. As such, the points made in the previous section become even more crucial. That is, targeting and working with offenders who present with risk factors for attrition, thereby facilitating their retention in treatment, is a crucial task that could potentially have significant public safety effects given that these individuals, untreated, present with the highest rates of recidivism.

4.4 Strengths, Limitations, and Future Directions

There are some important strengths, limitations, and possible future directions with the present study. Regarding the study methodology, comprehensive file information was available, overall, for the participants. This facilitated relatively complete scoring of the measures and data collection protocol, confidence in the scoring, and very good inter-rater reliability. Relating to the inter-rater reliability, high standards were set for rater training, with each rater receiving approximately one full day of training. Given that the study was archival, a relatively lengthy follow-up time (close to 10 years) was possible, permitting a more complete examination of recidivism compared to studies with shorter follow-up times. There are also some limitations regarding the study methodology. The sample size of 185 (180 with outcome information) was moderate in size and deceasing cell sizes in categorical analyses may have reduced the statistical power for some analyses. The current study did not include a control group; therefore comparisons between treated offenders and true untreated offenders (i.e., not treatment dropouts) were not possible. It was advantageous to have detailed information about the treatment program and the participants. The Clearwater Sex Offender Treatment Program has been the focus of numerous previous studies relating to risk assessment and treatment outcome, which permitted important comparisons. However, participants comprised offenders who were selected to transfer to the Regional Psychiatric Centre based on their risk and needs. This may limit the generalizability of the findings to offenders in general, particularly those who are lower risk and need.

A principal strength of the study is that it provided a revalidation of some commonly used risk assessment measures. It re-validated the Static-99R and provided support for the use of this new measure over its predecessor, the Static-99. Additional support was also provided for the VRS-SO, including the predictive validity of the scale and factor scores and the change

measures. Of particular interest, the current study examined the capacity of the STABLE 2007 to capture change and the relationship of such change to outcome. Following on the work completed on the Dynamic Supervision Project by Hanson and colleagues (2007), to the author's knowledge, this would be the second study to examine dynamic sexual violence risk with the STABLE 2007. This may be a beneficial avenue for additional examination in the future. The current study also validated the TRRG:SV in a sample of sex offenders and, given its impressive performance throughout the analyses, supported the use of this measure with this population. Again, to this author's knowledge, this type of validation with the TRRG:SV has not previously been conducted.

A noteworthy limitation relates again to the modest sample size and the limited possible scope of the study. Previous studies have indicated that age and ethnicity may impact, or confound, the examination of risk assessment and treatment outcome among sex offenders. For example, it has been suggested that risk assessment measures may not adequately account for the relationship between age and recidivism among sex offenders, hence the development of the Static-99R (Helmus et al., 2012; Nicholaichuk et al., 2013). Further, the STABLE 2007 has been found to demonstrate decreased predictive accuracy among Aboriginal compared to Non-Aboriginal offenders (e.g., Hanson et al., 2007; Helmus, Babchishin, & Blais, 2012). Due to power considerations, analyses were not performed with participants divided according to these categories. Future research may well be advised to pursue these lines of investigation. Particularly relating to whether risk assessment measures and treatment programs are valid and effective with Aboriginal offenders, especially considering their increasing representation among correctional populations.

While the risk assessment tools, clinical rating scales, and measures of change predicted sexual and violent recidivism in the current study, there remains a large proportion of variability unaccounted for. The sources of this variability are currently unclear, but may include, for example, unmeasured risk factors, individual characteristics (e.g., age, ethnicity), and prior programming experiences. In future research, it may be fruitful to examine the effect of these, and other factors on outcome, including within-treatment outcome, attrition, and recidivism. Another possible avenue for future research may be to examine the utility of general violence risk assessment tools among sex offenders, particularly given the overlap of sexual and violent recidivism, given that they have also been found to predict recidivism in sex offenders (Hanson

& Morton-Bourgon, 2009). Arguably, an important consideration in using general violence tools with sex offenders is that sex offender-specific risk factors (e.g., sexual deviance) as well as treatment factors would not be assessed, which in the current study, were found to predict recidivism as well as change on these domains. As such, important risk and treatment information may not be captured by more general tools.

In conclusion, the present study examined relationships among treatment readiness and responsivity issues, therapeutic change, treatment attrition, and recidivism. Support for the measures under investigation was provided, as was support for the effectiveness of a high intensity cognitive-behavioral sex offender treatment program that adhered to the principles of effective correctional treatment (i.e., risk, need, and responsivity). The importance of including dynamic measures, measures of treatment-related issues, and change measures in comprehensive risk assessment was highlighted. Importantly, it was demonstrated that, among successful program participants, measures of static risk were unable to capture their therapeutic change, corresponding reductions in risk, and reduced recidivism. Overall, dynamic risk assessment measures and ratings of treatment readiness, responsivity, and gain uniquely contributed to static measures in the prediction of recidivism. Therapeutic change also predicated recidivism above and beyond risk level. The study demonstrated that the offenders most in need of treatment (i.e., high risk and high need offenders) are the ones least likely to remain in, and successfully benefit from, treatment. These offenders also demonstrated the highest rates of recidivism. This group of offenders will undoubtedly constitute a difficult clientele to work with, although they may very well stand the most to benefit from therapeutic service provision. Sexual offending remains an important issue across Canada and particularly in Saskatchewan. Research has demonstrated that correctional psychology can play an important role in the assessment, management, and rehabilitation of sex offenders. The current study supports this research and encourages continued growth and development in this important area.

References

Abracen, J., Looman, J., Ferguson, M., Harkins, L., & Mailloux, D. (2011). Recidivism among treated sexual offenders and comparison subjects: Recent outcome data from the Regional Treatment Centre (Ontario) high-intensity Sex Offender Treatment Programme. *Journal of Sexual Aggression, 17,* 142-152. doi: 10.1080/13552600903511980

Alexander, M.A. (1999). Sexual offender treatment efficacy revisited. *Sexual Abuse: A Journal of Research and Treatment, 11,* 101-116. doi: 10.1007/BF02658841

Allan, M., Grace, R.C., Rutherford, B., Hudson, S.M. (2007). Psychometric assessment of dynamic risk factors for child molesters. *Sexual Abuse: A Journal of Research and Treatment, 19,* 347-367. doi: 10.1177/107906320701900402

Andrews, D.A., & Bonta, J.S. (2003). *The psychology of criminal conduct* (3rd ed.). Cincinnati, OH: Anderson.

Andrews, D.A., Bonta, J., & Wormith, J.S. (2006). The recent past and near future of risk and/or need assessment. *Crime & Delinquency, 52,* 7-27. doi: 10.1177/0011128705281756

Babchishin, K. M., Blais, J., & Helmus, L. (2012). Do static risk factors predict differently for Aboriginal sex offenders? A multi-site comparison using the original and revised Static-99 and Static-2002 scales. *Canadian Journal of Criminology and Criminal Justice, 54,* 1-43. doi: 10.3138/cjccj.2010.E.40

Beech, A., Bourgon, G., Hanson, R.K., Harris, A.J.R., Langton, C., Marques, J., Miner, M., Murphy, W., Quinsey, V., Seto, M., Thornton, D., & Yates, P.M. (2007). *Sexual offender treatment outcome research: CODC guidelines for evaluation* (User Report 2007-02). Ottawa: Public Safety and Emergency Preparedness Canada.

Beggs, S. (2010). Within-treatment outcome among sexual offenders: A review. *Aggression and Violent Behavior, 15,* 369-379. doi: 10.1016/j.avb.2010.06.005

Beggs, S. M., & Grace, R. C. (2010). Assessment of dynamic risk factors: An independent validation study of the Violence Risk Scale: Sexual Offender version. *Sexual Abuse: A Journal of Research and Treatment, 22,* 234-251. doi: 10.1177/1079063210369014

Beggs, S.M, & Grace, R.C. (2011). Treatment gain for sexual offenders against children predicts reduced recidivism: A comparative validity study. *Journal of Consulting and Clinical Psychology, 79,* 182-192. doi: 10.1037/a0022900

Beyko, M. J., & Wong, S. C. P. (2005). Predictors of treatment attrition as indicators for program improvement not offender shortcomings: A study of sex offender treatment attrition. *Sexual Abuse: A Journal of Research and Treatment, 17*, 375-389. doi: 10.1177/10790632050170040

Boe, R., Nafekh, M., Vuong, B., Sinclair, R., & Cousineau, C. (2003). *The changing profile of the federal inmate population: 1997 and 2002* (Research Report No. R-132). Ottawa, Ontario, Correctional Services Canada.

Bonta, J. (1996). Risk-needs assessment and treatment. In A. T. Harland (Ed.), Choosing correctional options that work: Defining the demand and evaluating the supply (pp. 18-32). Thousand Oaks, CA: Sage.

Bonta, J., & Andrews, D.A. (2007). *Risk-Need-Responsivity model for offender assessment and rehabilitation* (User Report 2007-06). Ottawa: Public Safety and Emergency Preparedness Canada.

Bonta, J., Dauvergne, M., & Rugge, T. (2003). *The reconviction rate of federal offenders* (User Report 2003-02). Ottawa: Department of the Solicitor General of Canada.

Brennan, S., & Dauvergne, M. (2012). *Police reported crime statistics in Canada, 2011.* Statistics Canada. Retrieved from http://www.statcan.gc.ca/pub/85-002-x/2012001/article/11692-eng.pdf

Brennan, S., & Dauvergne, M. (2011). *Police reported crime statistics in Canada, 2010.* Statistics Canada. Retrieved from http://www.statcan.gc.ca/pub/85-002-x/2011001/article/11523-eng.pdf

Brennan, S., & Taylor-Butts, A. (2008). *Sexual assault in Canada 2004 and 2007*. Statistics Canada. Retrieved from http://www.statcan.gc.ca/pub/85f0033m/85f0033m2008019-eng.pdf

Browne, K.D., Foreman, L., & Middleton, D. (1998). Predicting treatment drop-out in sex offenders. *Child Abuse Review, 7*, 402-419. doi: 10.1002/(SICI)1099-0852(199811/12)7:6<402::AID-CAR530>3.0.CO;2-9

Campbell, M.A., French, S., & Gendreau, P. (2009). The prediction of violence in adult offenders: A meta-analytic comparison of instruments and methods of assessment. *Criminal Justice and Behavior, 36*, 567-590. doi: 10.1177/0093854809333610

Canales, D. D., Olver, M. E., & Wong, S. C. P. (2009). Construct validity of the Violence Risk Scale-Sexual Offender version for measuring sexual deviance. *Sexual Abuse: A Journal of Research and Treatment, 21*, 474-492. doi: 10.1177/1079063209344990

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155-159. doi: 10.1037/0033-2909.112.1.155

Corbett, C., Patel, V., Erickson, M., & Friendship, C. (2003). The violent reconviction of sexual offenders. *Journal of Sexual Aggression, 9,* 31-39. doi: 10.1080/1355260031000137959

Corrections and Conditional Release Statistical Overview. (2004). Public Safety and Emergency Preparedness Canada, Ottawa, Ontario, Canada. Retrieved from http://publications.gc.ca/collections/Collection/PS4-12-2004E.pdf

Corrections and Conditional Release Statistical Overview. (2012). Public Safety Canada, Ottawa, Ontario, Canada. Retrieved from http://www.publicsafety.gc.ca/cnt/rsrcs/pblctns/2012-ccrs/index-eng.aspx#c8

Correctional Service of Canada (2009a). *Correctional programs: National Sex Offender Program – High Intensity.* Retrieved from http://www.csc-scc.gc.ca/text/prgrm/cor-pro-2009-eng.shtml#_Toc231830458

Correctional Service of Canada (2009b). *Correctional programs: Correctional program descriptions*. Retrieved from http://www.csc-scc.gc.ca/text/prgrm/cor-pro-2009-eng.shtml

Correctional Service of Canada (2010). *Statistics: Key facts and figures.* Retrieved from http://www.csc-scc.gc.ca/publications/005007-3024-eng.shtml

Cortoni, F. & Nunes, K.L. (2007). *Assessing the effectiveness of the National Sexual Offender Program* (Research Report No R-183). Ottawa: Correctional Service of Canada.

Craig, L. (2011). The effect of age on sexual and violent reconviction. *International Journal of Offender Therapy and Comparative Criminology,* 55, 75-97. doi: 10.1177/0306624X09353290

Craig, L.A., Browne, K.D., Stringer, I., & Beech, A. (2005). Sexual recidivism: A review of static, dynamic and actuarial predictors. *Journal of Sexual Aggression, 11*, 65-84. doi: 10.1080/13552600410001667733

Craig, L.A., Thornton, D., Beech, A., Browne, K.D. (2007). The relationship of statistical and

psychological risk markers to sexual reconviction in child molesters. *Criminal Justice and Behavior, 34,* 314-329. doi: 10.1177/0093854806291416

Dickey, R., Nussbaum, D., Chevolleau, K., & Davidson, H. (2002). Age as a differential characteristic of rapists, pedophiles and sexual sadists. *Journal of Sex & Marital Therapy, 28,* 211-278. doi: 10.1080/009262302760328252

Doren, D.M. (2004). Towards a multidimensional model for sexual recidivism risk. *Journal of Interpersonal Violence, 19,* 835-856. doi: 10.1177/0886260504266882

Douglas, K., & Skeem, J. (2005). Violence risk assessment: Getting specific about being dynamic. *Psychology, Public Policy, and Law, 11,* 347-383. doi: 10.1037/1076-8971.11.3.347

Duwe, G., & Goldman, R.A. (2009). The impact of prison-based treatment on sex offender recidivism: Evidence from Minnesota. *Sexual Abuse: A Journal of Research and Treatment, 21,* 279-307. doi: 10.1177/1079063209338490

Eher, R., Matthes, A., Schilling, F., Haubner-MacLean, T., Rettenberger, M. (2012). Dynamic risk assessment in sexual offenders using STABLE-2000 and STABLE-2007: An investigation of predictive and incremental validity. *Sexual Abuse: A Journal of Research and Treatment, 24,* 5-28. doi: 10.1177/1079063211403164

Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). London: SAGE Publications Ltd.

Gallagher, C.A., Wilson, D.B., Hirschfield, P., Coggeshall, M.B., & McKenzie, D.L. (1999). A quantitative review of the effects of sex offender treatment on sexual reoffending. *Corrections Management Quarterly, 3,* 19-29. Abstract retrieved from https://www.ncjrs.gov/App/Publications/abstract.aspx?ID=179268

Hall, G.C. (1995). Sexual offender recidivism revisited: A meta-analysis of recent treatment studies. *Journal of Consulting and Clinical Psychology, 63,* 802-809. doi: 10.1037/0022-006X.63.5.802

Hanson, R.K. (1997). *The development of a brief actuarial risk scale for sexual offense recidivism* (User Report 1997-04). Ottawa, Ontario, Canada: Department of the Solicitor General of Canada.

Hanson, R.K. (2002). Recidivism and age: Follow-up data from 4,673 sexual offenders. *Journal of Interpersonal Violence, 17,* 1046-1062. doi: 10.1177/088626002236659

Hanson, R.K. (2006). Does Static-99 predict recidivism among older sexual offenders? *Sexual Abuse: A Journal of Research and Treatment, 18,* 343-355. doi: 10.1007/s1194-006-9027-y

Hanson, R.K. (2008). What statistics should we use to report predictive accuracy? *Crime Scene, 15,* 15-17. Retrieved from http://www.cpa.ca/cpasite/userfiles/Documents/Criminal%20Justice/Crime%20Scene%202008-04.pdf

Hanson, R.K., Bourgon, G., Helmus, L., & Hodgson, S. (2009). *A meta-analysis of the effectiveness of treatment for sexual offenders: Risk, need, and responsivity* (User Report 2009-01). Ottawa: Public Safety and Emergency Preparedness Canada.

Hanson, R.T., & Bussière, M.T. (1998). Predicting relapse: A meta-analysis of sexual offender recidivism studies. *Journal of Consulting and Clinical Psychology, 66,* 348-362. doi: 0022-006X/98/$3.00

Hanson, R.K., Gordon, A., Harris, A.J.R., Marques, J.K., Murphy, W., Quinsey, V.L., & Seto, M.C. (2002). *Sexual Abuse: A Journal of Research and Treatment, 14,* 169-194. doi: 1079-0632/02/0400-0169/0

Hanson, R.K., & Harris, A. (2000). Where should we intervene? Dynamic predictors of sexual offense recidivism. *Criminal Justice and Behavior, 27,* 6-35. doi: 10.1177/0093854800027001002

Hanson, R.K., & Harris, A. (2001). A structured approach to evaluating change among sexual offenders. *Sexual Abuse: A Journal of Research and Treatment, 13*, 105-122. doi: 10.1023/A:1026600304489

Hanson, R.K., Harris, A., Scott, T., & Helmus, L. (2007). *Assessing the risk of sexual offenders on community supervision: The Dynamic Supervision Project* (User Report 2007-05). Ottawa: Public Safety and Emergency Preparedness Canada.

Hanson, R.K., & Morton-Bourgon, K.E. (2004). *Predictors of sexual recidivism: An updated meta-analysis* (User Report 2004-02). Ottawa: Public Safety and Emergency Preparedness Canada.

Hanson, R.K., & Morton-Bourgon, K.E. (2005). The characteristics of persistent sexual offenders: A meta-analysis of recidivism studies. *Journal of Consulting and Clinical Psychology, 73,* 1154-1163. doi: 10.1037/0022-006X.73.6.1154

Hanson, R.K., & Morton-Bourgon, K.E. (2009). The accuracy of recidivism risk assessments for sexual offenders: A meta-analysis of 118 prediction studies. *Psychological Assessment, 21*, 1-21. doi: 10.1037/a0014421

Hanson, R.K., & Nicholaichuk, T. (2000). A cautionary note regarding Nicholaichuk et al. (2000). *Sexual Abuse: A Journal of Research and Treatment, 12*, 289-293. doi: 1079-0632/00/1000-289$18.00/0

Hanson, R.K., & Thornton, D. (1999). *Static-99: Improving actuarial risk assessments for sex offenders* (User Report 1999-02). Ottawa, Ontario, Canada: Department of the Solicitor General of Canada.

Hare, R.D. (2003). *The Psychopathy Checklist – Revised.* Toronto: Multi-Health Systems.

Harris, A., & Hanson, R. K. (2004). *Sex offender recidivism: A simple question* (User Report 2004-03). Ottawa: Public Safety and Emergency Preparedness Canada.

Harris, A., Phenix, A., Hanson, R.K., & Thornton, D. (2003). *Static-99 Coding Rules Revised – 2003.* Ottawa, Ontario, Canada: Department of the Solicitor General of Canada.

Helmus, L. (2009). *Re-norming Static-99 recidivism estimates: Exploring base rate variability across sex offender samples* (Master's thesis). Pro-Quest Dissertations and Theses database (UMI No. MR58443) and http://www.static99.org/pdfdocs/helmus2009-09static-99normsmathesis.pdf

Helmus, L., Babchishin, K.M., & Blais, J. (2012). Predictive accuracy of dynamic risk factors for Aboriginal and Non-Aboriginal sex offenders: An exploratory comparison using STABLE-2007. *International Journal of Offender Therapy and Comparative Criminology, 56,* 856-876. doi: 10.1177/0306624X11414693

Helmus, L., Babchishin, K.M., Hanson, R.K., & Thornton, D. (2009). *Static-99R: Revised Age Weights* (User Report 2009-10-05). Retrieved from http://www.static99.org/pdfdocs/static-99randage20091005.pdf

Helmus, L., Hanson, R.K., Thornton, D., Babchishin, K.M., Harris, A.J.R. (2012). Absolute recidivism rates predicted by Static-99R and Static-2002R sex offender risk assessment tools vary across samples: A meta-analysis. *Criminal Justice and Behavior, 39,* 1148-1171. doi: 10.1177/0093854812443648

Helmus, L., Thornton, D., Hanson, R.K., & Babchishin, K.M. (2012). Improving the predictive

accuracy of Static-99 and Static-2002 with older sex offenders: Revised age weights. *Sexual Abuse: A Journal of Research and Treatment, 24,* 64-101. doi: 10.1177/1079063211409951

Humphreys, L.G., & Swets, J.A. (1991). Comparison of predictive validities measured with biserial correlations and ROCs of signal detection theory. *Journal of Applied Psychology, 76,* 316-321. doi: 10.1037/0021-9010.76.2.316

Kraemer, H. C., Kazdin, A. E., Offord, D. R., Kessler, R.C., Jensen, P. S., & Kupfer, D. J. (1997). Coming to terms with the terms of risk. *Archives of General Psychiatry, 54*, 337-343. doi:10.1001/archpsyc.1997.01830160065009

Langevin, R., Langevin, M., & Curnoe, S. (2007). Family size, birth order, and parental age among male paraphilics and sex offenders. *Archives of Sexual Behavior, 36,* 599-609. doi: 10.1007/s10508-006-9110-y

Looman, J., Abracen, J., & Nicholaichuk, T.P. (2000). Recidivism among treated sexual offenders and matched controls: Data from the Regional Treatment Centre (Ontario). *Journal of Interpersonal Violence, 15,* 279-290. doi: 10.1177/088626000015003004

Losel, F., & Schmucker, M. (2005). The effectiveness of treatment for sexual offenders: A comprehensive meta-analysis. *Journal of Experimental Criminology, 1,* 117-146. doi: 10.1007/s11292-004-6466-7

Mailloux, D.L., Abracen, J., Serin, R., Cousineau, C., Malcolm, B., & Looman, J. (2003). Dosage of treatment to sexual offenders: Are we overprescribing? *International Journal of Offender Therapy and Comparative Criminology, 47,* 171-184. doi: 10.1177/0306624X03251096

Marques, J.K., Wiederanders, M., Day, D.M., Nelson, C., & van Ommeren, A. (2005). Effects of a relapse prevention program on sexual recidivism: Final results from California's Sex Offender Treatment and Evaluation Project (SOTEP). *Sexual Abuse: A Journal of Research and Treatment, 17,* 79-107. doi: 10.1007/s11194-005-1212-x

McGrath, R.J., Cumming, G.F., Buchard, B.L., Zeoli, S., & Ellerby, L. (2010). *Current practices and emerging trends in sexual abuser management: The Safer Society 2009 North American Survey.* Brandon, VT: Safer Society Press.

Mills, J. (2005). Advances in the assessment and prediction of interpersonal violence. *Journal of Interpersonal Violence, 20,* 236-241. doi: 10.1177/0886260504267745

Motiuk, L.L. & Porporino, F. (1993). *Factors related to recidivism among released federal sex Offenders* (Research Report No. R-49). Ottawa: Correctional Service of Canada.

National Household Survey (2011). *Aboriginal Peoples in Canada: First Nations People, Métis and Inuit.* Statistics Canada. Retrieved from http://www12.statcan.gc.ca/nhs-enm/2011/as-sa/99-011-x/99-011-x2011001-eng.pdf

Nicholaichuk, T.P. (2011, November). The comparison of two standardized risk assessment instruments (RRASOR, Hanson, 1997; STATIC 99. Hanson and Thornton, 1999) in a sample of Canadian Aboriginal Sexual Offenders. Paper presented at the 20th Annual Research & Treatment Conference, Association for the Treatment of Sexual Abusers, San Antonio, Texas.

Nicholaichuk, T., Gordon, A., Gu, D., & Wong, S. (2000). Outcome of an institutional sex offender treatment program: A comparison between treated and matched untreated offenders. *Sexual Abuse: A Journal of Research and Treatment, 12*, 139-153. doi: 10.1177/107906320001200205

Nicholaichuk, T.P., Olver, M.E., Gu, D., & Wong, S.C.P. (2013). Age, actuarial risk, and long-term recidivism in a national sample of sex offenders. *Sexual Abuse: A Journal of Research and Treatment.* Advance online publication. doi: 10.1177/1079063213492340

Nunes, K.L., Babchishin, K.M., & Cortoni, F. (2011). Measuring treatment change in sex offenders: Clinical and statistical significance. *Criminal Justice and Behavior, 38*, 157-173. doi: 10.1177/0093854810391054

Nunes, K. L., & Cortoni, F (2007). *Assessing treatment change in sexual offenders* (Research Report No. R-184). Ottawa: Correctional Service of Canada.

Nunes, K.L., & Cortoni, F. (2008). Dropout from sex-offender treatment and dimensions of risk of sexual recidivism. *Criminal Justice and Behavior, 35*, 24-33. doi: 10.1177/0093854807309037

Olver, M. E., Beggs Christofferson, S. M., Grace, R. C., & Wong, S. C. P. (2 October 2013). Incorporating change information into sexual offender risk assessments using the Violence Risk Scale-Sexual Offender version. *Sexual Abuse: A Journal of Research and Treatment.* Published ahead of print doi: 10.1177/1079063213502679

Olver, M.E., & Daniels, T. (in press). Working outside the box with incarcerated

men. In A.B. Rochlen and F.E. Rabinowitz (Eds.). *Breaking barriers in counseling men: Insights and innovations* (pp. 135-145). New York, NY: Routledge.

Olver, M.E., Nicholaichuk, T.P., Gu, D., Wong, S.C.P. (2012). Sex offender treatment outcome, actuarial risk, and the aging sex offender in Canadian corrections: A long-term follow-up. *Sexual Abuse: A Journal of Research and Treatment, 25,* 396-422. doi: 10.1177/1079063212464399

Olver, M.E., Nicholaichuk, T.P., Kingston, D.A., & Wong, S.C.P. (2013, in press). A multisite examination of sexual violence risk and therapeutic change. *Journal of Consulting and Clinical Psychology*. doi: 10.1037/a0035340

Olver, M.E., Nicholaichuk, T.P., & Wong, S.C.P. (2013). The predictive and convergent validity of a psychometric battery used to assess sexual offenders in a treatment program: An 18-year follow-up. *Journal of Sexual Aggression.* doi: 10.1080/13552600.2013.816791

Olver, M.E., Stockdale, K.C., Wormith, J.S. (2011). A meta-analysis of predictors of offender treatment attrition and its relationship to recidivism. *Journal of Consulting and Clinical Psychology, 79,* 6-21. doi: 10.1037/a0022200

Olver, M.E., & Wong, S.C.P. (2006). Psychopathy, sexual deviance, and recidivism among sex offenders. *Sexual Abuse: A Journal of Research and Treatment, 18,* 65-82. doi:10.1177/107906320601800105

Olver, M.E., & Wong, S.C.P. (2011a). A comparison of static and dynamic assessment of sexual offender risk and need in a treatment context. *Criminal Justice and Behavior, 38,* 113-126. doi: 10.1177/0093854810389534

Olver, M.E., & Wong, S. (2011b). Predictors of sex offender treatment dropout: psychopathy, sex offender risk, and responsivity implications. *Psychology, Crime & Law, 17*, 457-471. doi: 10.1080/10683160903318876

Olver, M.E., & Wong, S. (2013). A description and research review of the Clearwater Sex Offender Treatment Programme. *Psychology, Crime & Law, 19*, 477-492. doi: 10.1080/1068316X.2013.758983

Olver, M.E., & Wong, S.C.P. (2013). Treatment programs for high risk sexual

offenders: Program and offender characteristics, attrition, treatment change, and recidivism. *Aggression and Violent Behavior, 18,* 579-591 doi: 10.1016/j.avb.2013.06.002

Olver, M.E., Wong, S.C.P., Nicholaichuk, T.P. (2009). Outcome evaluation of a high-intensity inpatient sex offender treatment program. *Journal of Interpersonal Violence, 24,* 522-536. doi: 10.1177/0886260508317196

Olver, M.E., Wong, S.C.P., Nicholaichuk, T., & Gordon, A. (2007). The validity and reliability of the Violence Risk Scale-Sex Offender version: Assessing sex offender risk and evaluating therapeutic change. *Psychological Assessment, 19,* 318-329. doi: 10.1037/1040-3590.19.3.318

Perreault, S. (2009). *The incarceration of Aboriginal people in adult correctional services.* Statistics Canada. Retrieved from http://www.statcan.gc.ca/pub/85-002-x/2009003/article/10903-eng.htm#a5

Prochaska, J.O., DiClemente, C.C., & Norcross, J.C. (1992). In search of how people change: Applications to addictive behaviors. *American Psychologist, 47,* 1102-14. doi: 10.3109/10884609309149692

Rice, M.E. & Harris, G.T. (2003). The size and sign of treatment effects in sex offender therapy. *Annals of the New York Academy Sciences, 989,* 428-440. doi: 10.1111/j.1749-6632.2003.tb07323.x

Rice, M.E., & Harris, G.T. (2005). Comparing effect sizes in follow-up studies: ROC area, Cohen's *d*, and *r*. *Law and Human Behavior, 29,* 615-620. doi: 10.1007/s10979-005-6832-7

Rice, M.E., Harris, G.T., Lang, C., & Cormier, C.A. (2006). Violent sex offenses: How are they best measured from official records? *Law and Human Behavior, 30,* 525-541. doi: 10.1007/s10979-006-9022-3

Seager, J.A., Jellicoe, D., & Dhaliwal, G.K. (2004). Refusers, dropouts, and completers: Measuring sex offender treatment efficacy. *International Journal of Offender Therapy and Comparative Criminology, 48,* 600-612. doi: 10.1177/0306624X04263885

Serin, R.C., Kennedy, S.M., & Mailloux, D.L. (2005). *Manual for the Treatment Readiness, Responsivity, and Gain Scale: Short Version (TRRG:SV).* Ottawa, Ontario, Canada: Carleton University.

Serin, R.C., Mailloux, D.L., & Kennedy, S.M. (2007). Development of a clinical rating scale for offender readiness: Implications for assessment and offender change. *Issues in Forensic Psychology, 7*, 70-80.

Thornton, D. (2002). Constructing and testing a framework for dynamic risk assessment. *Sexual Abuse: A Journal of Research and Treatment, 14,* 139-153. doi: 10.1177/1079063202011400205

Thornton, D. (2006). Age and sexual recidivism: A variable connection. *Sexual Abuse: A Journal of Research and Treatment, 18,* 123-136. doi: 10.1177/107906320601800202

Tierney, D.W., & McCabe M.P. (2001). The validity of the trans-theoretical model of behavior change to investigate motivation to change among child molesters. *Clinical Psychology and Psychotherapy, 8*, 176-190). doi: 10.1002/cpp.285

Tierney, D.W., & McCabe, M.P. (2002). Motivation for behavior change among sex offenders: A review of the literature. *Clinical Psychology Review, 22*, 113-129. doi: 10.1016/S0272-7358(01)00084-8

Tully, R.J., Chou, S., & Browne, K.D. (2013). A systematic review on the effectiveness of sex offender risk assessment tools in predicting sexual recidivism of adult male sexual offenders. *Clinical Psychology Review, 33*, 287-316. doi: 10.1016/j.cpr.2012.12.002

Wakeling, H., Beech, A.R., & Freemantle, N. (2013). Investigating treatment change and its relationship to recidivism in a sample of 3773 sex offenders in the UK. *Psychology, Crime & Law, 19,* 233-252. doi: 10.1080/1068316X.2011.626413

Williams, F., Wakeling, H., Webster, S. (2007). A psychometric study of six self-report measures for use with sexual offenders with cognitive and social functioning deficits. *Psychology, Crime & Law, 13,* 505-522. doi: 10.1080/10683160601060739

Wilson, N. J. (2008). *New Zealand pilot prison based treatment of high risk rape offenders*. Final report to Policy, Strategy, & Research. New Zealand Department of Corrections.

Wong, S., Olver, M.E., Nicholaichuk, T.P., & Gordon, A. (2003). *The Violence Risk Scale – Sexual Offender version (VRS-SO).* Regional Psychiatric Centre and University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

Wong, S. C. P., Olver, M. E., & Stockdale, K. C. (2009*).* The utility of static and dynamic

factors in risk assessment, prediction, and treatment. In J. Andrade (Ed.) *Handbook of violence risk assessment and treatment: New approaches for mental health professionals* (pp. 83-120). Springer: New York.

Wormith, J.S., & Olver, M.E. (2002). Offender treatment attrition and its relationship with risk, responsivity, and recidivism. *Criminal Justice and Behavior, 29*, 447-471. doi: 10.1177/0093854802029004006

Appendix A

The Static-99 (Hanson & Thornton, 1999)

Risk Factor	Codes		Score
Prior Sex Offenses	Charges	Convictions	
	None	None	0
	1-2	1	1
	3-5	2-3	2
	6 +	4+	3
Prior Sentencing Dates	3 or less		0
	4 or more		1
Any Convictions for Non-Contact Sex Offenses	No		0
	Yes		1
Index Non-Sexual Violence	No		0
	Yes		1
Prior Non-Sexual Violence	No		0
	Yes		1
Any Unrelated Victims	No		0
	Yes		1
Any Stranger Victims	No		0
	Yes		1
Any Male Victims	No		0
	Yes		1
Young	Aged 25 or older		0
	Aged 18 – 24		1
Single	Yes		0
	No		1
		Total Score	_____

Appendix B

The Static-99R (Helmus, Babchishin, Hanson, & Thornton, 2009)

Risk Factor	Codes	Score
Age at release	Aged 18 to 34.9 Aged 35 to 39.9 Aged 40 to 59.9 Aged 60 or older	1 0 -1 -3
Ever Lived With	Ever lived with a lover for at least two years? Yes No	 0 1
Index non-sexual violence – Any Convictions	No Yes	0 1
Prior non-sexual violence – Any Convictions	No Yes	0 1
Prior Sex Offenses	<u>Charges</u> <u>Convictions</u> 0 0 1,2 1 3-5 2,3 6 + 4+	 0 1 2 3
Prior sentencing dates (excluding index)	3 or less 4 or more	0 1
Any convictions for non-contact sex offenses	No Yes	0 1
Any Unrelated Victims	No Yes	0 1
Any Stranger Victims	No Yes	0 1
Any Male Victims	No Yes	0 1
Total Score	**Add up scores from individual risk factors**	

Appendix C

The VRS-SO (Wong, Olver, Nicholaichuk, & Gordon, 2003)

Static Factors

Risk Factor	Codes	Score
S1 Age at Time of Release	Under 25 years 25 to 34 years 35 to 44 years 45 years or older	3 2 1 0
S2 Age at First Sexual Offense	Under 20 years 20 to 24 years 25 to 34 years 35 years or older	3 2 1 0
S3 Sex Offender Type	Mixed (both adult and child victims) Child molester (child victims only) Rapist (adult victims only) Incest (related victims predominantly)	3 2 1 0
S4 Prior Sexual Offenses	4-4+ prior arrests/charges/convictions for a sexual offense 2-3 prior arrests/charges/convictions for a sexual offense 1 prior arrest/charge/conviction for a sexual offense No prior arrest/charge/conviction for a sexual offense	3 2 1 0
S5 Unrelated Victims	4 or more unrelated victims 2-3 unrelated victims 1 unrelated victim No unrelated victims (related victims only)	3 2 1 0
S6 Number and Gender of Victims	2 or more male victims & any number of female victims 2 or more female victims or 1 female victim and 1 male victim 1 male victim only 1 female victim only	3 2 1 0
S7 Prior Sentencing Dates	11 or more prior sentencing occasions 5-10 prior sentencing occasions 2-4 prior sentencing occasions 0-1 prior sentencing occasions	3 2 1 0

Dynamic Factors and Total Scores

	Pre-Tx	Stage of Change	# of Stages changed x .5	Post-Tx	I or N
D1 Sexually Deviant Lifestyle	0 1 2 3	P/C P A M	1.5 1 .5 0		
D2 Sexual Compulsivity	0 1 2 3	P/C P A M	1.5 1 .5 0		
D3 Offense Planning	0 1 2 3	P/C P A M	1.5 1 .5 0		
D4 Criminal Personality	0 1 2 3	P/C P A M	1.5 1 .5 0		
D5 Cognitive Distortions	0 1 2 3	P/C P A M	1.5 1 .5 0		
D6 Interpersonal Aggression	0 1 2 3	P/C P A M	1.5 1 .5 0		
D7 Emotional Control	0 1 2 3	P/C P A M	1.5 1 .5 0		
D8 Insight	0 1 2 3	P/C P A M	1.5 1 .5 0		
D9 Substance Abuse	0 1 2 3	P/C P A M	1.5 1 .5 0		
D10 Community Support	0 1 2 3	P/C P A M	1.5 1 .5 0		
D11 Release to High Risk Situations	0 1 2 3	P/C P A M	1.5 1 .5 0		
D12 Sexual Offending Cycle	0 1 2 3	P/C P A M	1.5 1 .5 0		
D13 Impulsivity	0 1 2 3	P/C P A M	1.5 1 .5 0		
D14 Compliance with Community Supervision	0 1 2 3	P/C P A M	1.5 1 .5 0		
D15 Treatment Compliance	0 1 2 3	P/C P A M	1.5 1 .5 0		
D16 Deviant Sexual Preference	0 1 2 3	P/C P A M	1.5 1 .5 0		
D17 Intimacy Deficits	0 1 2 3	P/C P A M	1.5 1 .5 0		

	Pre-Tx		Post-Tx	
Total Dynamic Factor Score		Total Dynamic Factor Score		
Total Static Factor Score From Previous Page		Total Static Factor Score From Previous Page		
Total Static + Total Dynamic Factor Score		Total Static + Total Dynamic Factor Score		

Appendix D

The STABLE 2007 (Hanson & Harris, 2007)

Scoring Item	Notes	Section Total
Significant Social Influences		
Capacity for Relationship Stability		
Emotional ID with Children	(Only score this item for child molesters)	
Hostility Toward Women		
General Social Rejection		
Lack of concern for others		
Impulsive		
Poor Problem Solving Skills		
Negative Emotionality		
Sex Drive/Sex Preoccupation		
Sex as Coping		
Deviant Sexual Preference		
Deviant Sexual Interests in Possible Remission An offender who has scored a "2" based upon historical facts can have their Deviant Sexual Interest score reduced by one point if the following is present: The offender is involve in an age appropriate, consensual, satisfying sexual relationship of at least one year's duration while "at risk" in the community with the absence of behavioral indicators of Deviant Sexual Interest for 2 years. If the presence of this relationship has been confirmed by a credible, independent, collateral contact and the above condition applies you may enter and count a "negative 1" in this score box – reducing the offender's overall score by "1"		
Co-operation with Supervision		
	Sum for Final Total	_____
	(Out of 24 for those without a child victim)	26

Interpretive Ranges: 0 – 3 = Low, 4 – 11 = Moderate, 12+ = High

Appendix E

The TRRG:SV (Serin, Kennedy, & Mailloux, 2005)

Treatment Readiness
Score Sheet

	Pre	Post	Change
1. Problem Recognition	_____	_____	-3 -2 -1 0 +1 +2 +3
2. Benefits of Treatment	_____	_____	-3 -2 -1 0 +1 +2 +3
3. Treatment Interest	_____	_____	-3 -2 -1 0 +1 +2 +3
4. Treatment Distress	_____	_____	-3 -2 -1 0 +1 +2 +3
5. Treatment Goals	_____	_____	-3 -2 -1 0 +1 +2 +3
6. Treatment Behaviors	_____	_____	-3 -2 -1 0 +1 +2 +3
7. Motivational Consistency	_____	_____	-3 -2 -1 0 +1 +2 +3
8. Treatment Support	_____	_____	-3 -2 -1 0 +1 +2 +3
TOTAL	_____	_____	CHANGE _____

Appendix E Continued

The TRRG:SV (Serin, Kennedy, & Mailloux, 2005)

Treatment Responsivity
Score Sheet

	Pre	Post	Change
1. Callousness	_____	_____	-3 -2 -1 0 +1 +2 +3
2. Denial	_____	_____	-3 -2 -1 0 +1 +2 +3
3. Procrastination	_____	_____	-3 -2 -1 0 +1 +2 +3
4. Intimidation	_____	_____	-3 -2 -1 0 +1 +2 +3
5. Power and Control	_____	_____	-3 -2 -1 0 +1 +2 +3
6. Rigidity	_____	_____	-3 -2 -1 0 +1 +2 +3
7. Victim Stance	_____	_____	-3 -2 -1 0 +1 +2 +3
8. Procriminal Views	_____	_____	-3 -2 -1 0 +1 +2 +3
TOTAL	_____	_____	CHANGE _____

Appendix E Continued

The TRRG:SV (Serin, Kennedy, & Mailloux, 2005)

Treatment Gain

Score Sheet

1.	Evidence of Increased skills From Program	_____
2.	Disclosure in Program	_____
3.	Application of Knowledge	_____
4.	Application of Skills	_____
5.	Depth of Emotional Understanding of Program Content	_____
6.	Appropriateness of Behavior in Group	_____
7.	Participation	_____
8.	Therapeutic Alliance	_____
	TOTAL	_____

Appendix F

Data Collection Protocol

Subject # (include name): _____

FPS#: _____

BASIC DEMOGRAPHICS

Date of Birth (yy/mm/dd): _____

Ethnicity:

a) Caucasian
b) Aboriginal
c) Asian
d) African Canadian
e) Add as Needed

Education (enter total years completed): _____

Learning difficulties (circle): Yes No N/A

Level of Cognitive Functioning (use any info available): _____
_____

CAAT scores if available:

Employment Background:

1. Never employed/predominantly unemployed
2. Intermittent employment history (significant periods of unemployment)
3. UnStable employment history (employed for 2+ years, but frequent changing of jobs)
4. Regularly employed/Stable employment history

Longest period of employment: _____

Marital Status:

1) Never married
2) Divorced/ separated
3) Currently common-law/married
4) Widowed

CRIMINAL HISTORY/ INDEX OFFENSE
Index Offense:
Sexual (contact)
Sexual (no-contact)
Non-Sexual Violent
Non-Sexual Non-violent

Specify: _____

Sex Offender Type:
a) Rapist
b) Child Molester
c) Mixed
d) Incest

Date of first adjudicated sexual offense (charge or conviction) (yy/mm/dd): _____
actual date offense was committed (yy/mm/dd): _____
Age at actual date offense was committed: _____
Age at time offense was adjudicated (charged or convicted): _____

Earliest age at first adjudicated sexual offense (DOB – date of 1st sex offense): _____

Offense History *(Do not include index offense when rating):*
Total prior charges for sexual offenses: _____
Total prior convictions for sexual offenses: _____
Total prior sexual offenses (charges + convictions) = _____

Total prior charges for non-sexual violent offenses: _____
Total prior convictions for non-sexual violent offenses: _____
Total prior non-sexual violent offenses (charges + convictions) = _____

Total prior charges for non-sexual non-violent offenses: _____
Total prior convictions for non-sexual non-violent offenses: _____
Total prior non-sexual non-violent offenses (charges + convictions) = _____

Total prior sentencing dates: _____

Sexual Offense History *(Count the index sexual offense):*
Number of male victims: _____
Number of female victims: _____
Number of unrelated victims: _____
Number of related victims: _____

RISK INFORMATION
SIR Scale rating (if available): _____

Risk estimation (if available):
Pre-treatment: _____
Post-treatment: _____

INSTITUTIONAL INFORMATION
Name of Parent Institution: _____

Security Level:
Minimum
Medium
Maximum

Sentencing Date (yy/mm/dd): _____

Index Sentence Length (years, months, and days): _____

Institutional Adjustment Problems/Conflict:
1. No
2. Yes
   Specify: _____
   - If yes, major or minor (circle)?
   - Before treatment/after txt/both (circle)?
   - If both, was there improvement? Yes or no (circle)?

Institutional Incidents:
Total: _____
# of minor incidents: _____ # of major incidents: _____
# of nonviolent incidents: _____ # of violent incidents: _____

PROGRAM INFORMATION
Program:
1. Wellspring
2. Clearwater

Date Admitted to program (yy/mm/dd): _____

Age upon admission (Admission Date - DOB): _____

Date discharged from the program (yy/mm/dd): _____

Total length of stay (months): _____

Program Status:
1. Successfully completed program
2. Attended all sessions
3. Discharged from program

Reason for discharge (if applicable):

1. Disruptive behavior
2. Low motivation/poor effort
3. Institutional infractions
4. Security concerns
5. Patient requested
6. Add as needed

Initiator of Discharge (if applicable):

1. Staff-initiated
2. Client-initiated
3. Mutually-initiated
4. System-initiated

PSYCHIATRIC INFORMATION

Axis I DSM diagnosis (not including substance abuse): _____

Axis II DSM diagnosis: _____

Substance abuse/dependence diagnosis: _____

RECIDIVISM

Release Date (yy/mm/dd): _____

Date of first reconviction (yy/mm/dd): _____

Date of first new sex offense (charge or reconviction) (yy/mm/dd): _____

Recidivistic Offenses:
Total new charges for sexual offense: _____
Total new convictions for sexual offense: _____
Total new sexual offenses (charges + convictions) = _____

Total new charges for non-sexual violent offense: _____
Total new convictions for non-sexual violent offense: _____
Total new non-sexual violent offenses (charges + convictions) = _____

Total new charges for non-sexual non-violent offense: _____
Total new convictions for non-sexual non-violent: _____
Total new non-sexual non-violent offenses (charges + convictions) = _____

Sentence length for first new sex offense (years, months, days): _____

Aggregate sentence length for new sex offenses (years, months, days): _____